THE RUBBER AGE AND TIRE NEWS

JULY 10, 1919 VOL. V NO. 7

Member of the Associated Business Papers, Inc.

INDEX TO CONTENTS

Manufacture of Sherardized Tube Mandrels..... 287
Prosperity Is Here—Let's Go..... 290
Information Exchange 290
Ostromyslenski's Vulcanization Without Sulphur.... 291
New Publications 293
Products That Have Been Called "Synthetic Rubber" 294
Personal Notes of the Trade..... 295
Expansion News of the Rubber Industry..... 296
Financial Notes of the Industry..... 297
Rubber Men Gather for Sport and Recreation..... 298
General News of the Rubber Trade..... 300

TIRE NEWS:
Big Era of Expansion Faces Auto and Tire Trade... 301
Tire Performance in Auto Races..... 302
Tire and Rubber Company News..... 303
American Rubber Patents..... 304
New Incorporations 304

MARKETS:
Manufactured Rubber Goods..... 305
Cotton, Yarns and Fabrics..... 305
Chemicals and Compounding Materials..... 306
Crude Rubber 307
Scrap Rubber 307

THE GARDNER-MOFFAT COMPANY, Inc., *Publisher*

HARTFORD BUILDING, UNION SQUARE

22 EAST 17th STREET, NEW YORK

SUBSCRIPTION PRICE: TWO DOLLARS PER YEAR, SINGLE COPIES TEN CENTS. CANADA: TWO DOLLARS AND A HALF A YEAR. FOREIGN: THREE DOLLARS A YEAR. COPYRIGHT, 1919, BY THE GARDNER-MOFFAT COMPANY, INC., PUBLISHERS.

ISSUED ON THE TENTH AND TWENTY-FIFTH OF EACH MONTH. FORMS CLOSE FIVE DAYS PREVIOUSLY. ENTERED AS SECOND-CLASS MATTER MARCH 26, 1917, AT THE POST OFFICE AT NEW YORK, N. Y., UNDER THE ACT OF MARCH 3, 1897.

TRENTON N.J., U.S.A. **ESSEX RUBBER COMPANY, Inc.** TRENTON N.J., U.S.A.

"ERCO" SOLES
"ESSEX" RUBBER HEELS
"TITE-EDGE" RUBBER HEELS

MOLDED SPECIALTIES

Trade Mark

AUTOMOBILE ACCESSORIES

INNER TUBES, CEMENTS, ETC.

MOLDED RUBBER GOODS

RED, ORANGE, YELLOW, BLUE, GREEN, VIOLET, BLACK, WHITE, ETC.

Brilliant and Strong COLORS

1890 L H B Co.

Inert and Accelerating FILLERS

L. H. BUTCHER COMPANY, INCORPORATED

ESTABLISHED 1890

NEW YORK AKRON SEATTLE LOS ANGELES SAN FRANCISCO

DEVINE

Devine High Efficiency Vacuum Chamber Dryers

For drying

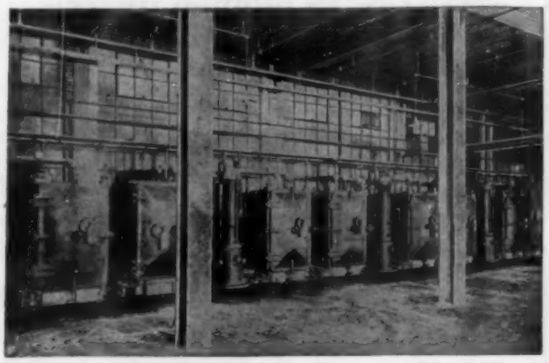
Sheet Rubber as it comes from the washer

VIEWS showing installation of Devine Vacuum Chamber Dryers in the plants of two of the largest manufacturers of Rubber Products in the Country.

VACUUM CHAMBER DRYING has many advantages over the old style hot air process, principal among these are: 1st, Rapid, thorough and uniform drying in a low temperature, independent of climatic conditions. 2nd, The rubber has greater elasticity due to the absence of high temperature and oxygen in vacuum. 3rd, The rubber is perfectly dried without drawing the resins to the surface. 4th, The drying period is reduced to from 1½ to 3 hours. 5th, The consumption of steam for power and drying purposes is reduced to a minimum. 6th, There is greater economy in factory space, as a Devine Dryer occupies only ⅛ the floor space required by the old style hot air or dry room. 7th, Greater saving in quantity of crude rubber to be carried in stock. 8th, Elimination of fire hazard.

THE OLD METHOD of drying requires the rubber stock to be hung in the loft from one week to a month, according to atmospheric conditions, while in a Devine Vacuum Chamber Dryer the sheet rubber is dried in a maximum of three hours.

Write us for Bulletin 101 on Vacuum Chamber Dryers



J. P. Devine Company

Main Office and Plant

1250 CLINTON ST., BUFFALO, N. Y.

New York Office—42nd St. Building

London—Jas. Livingston, Ltd.

DRYERS

L. D. GARDNER
PRESIDENT
W. D. MOFFAT
VICE-PRESIDENT
W. I. SEAMAN
TREASURER

THE RUBBER AGE AND TIRE NEWS

W. M. MILNER
EDITOR
H. M. WILLIAMS
GENERAL MANAGER
H. B. SEYMOUR
BUSINESS MANAGER

Vol. V | July 10, 1919 | No. 7

Manufacture of Sherardized Tube Mandrels

By W. M. Milner

Sherardized zinc alloyed tube mandrels, which are now so generally used by American manufacturers of inner tubes, first became known to the rubber industry about five years ago when A. F. Shoen, the original sherardizing man in America, treated a few lots of tube poles for the Fisk Rubber Company, Chicopee Falls, Mass., merely for experimental purposes.

These original sherardized inner tube mandrels were submitted to very rigid tests, and the results obtained were so satisfactory that the New Haven Sherardizing Company, New Haven, Conn., of which Mr. Schoen was and is today general manager, decided to thoroughly investigate the working conditions and requirements of sherardized mandrels, and what specifications were best suited for the manufacture of inner tubes.

GRINDING MANDRELS PRIOR TO SHERARDIZING

When the best method of sherardizing tube poles had been determined, special machinery was devised to handle this product and mandrels in actual use were treated in increasing numbers for tube manufacturers.

Later on new mandrels bought by rubber manufacturers were treated in large quantities and before long it was discovered that there were many classes of steel tubing, and that not all were suitable for inner tube mandrel purposes. Specifications were determined which should apply to all mandrels that should be used by rubber manufacturers. Specially manufactured tubing, uniformly straight, smooth and tempered for rigidity and stiffness is now being sherardized and supplied to rubber manufacturers, who are rapidly substituting this type of pole for those formerly used.

Recent developments in the use of sherardized equipment in rubber factories and the fact that it is not improbable that the near future will see sherardizing plants installed in all tire factories make the story of sherardizing of timely interest to the rubber industry.

Sherardizing

Sherardizing, or dry galvanizing, is a process whereby articles of iron or steel are made rust proof by applying zinc dust. Sherardizing is not merely the applying of a coating of zinc to the iron or steel, such as is the case with electro-plating or galvanizing, for the coating produced by sherardizing is first an alloy with the underlying metal. After this alloying action is completed the outer layer of zinc is deposited; the zinc penetrating into every crevice and cavity makes the process radically different from any other method of zinc coating. The coating applied by sherardizing is not a pure layer of zinc, but in the case of tube mandrels, a zinc-steel alloy. The coating is therefore not crystal hard as is the case with galvanizing and it is for this reason that it can be given the fine polished finish that is required on tube poles.

History

The ancient Greeks used a process called "copper bleaching process" for hardening copper articles, which was practically identical to sherardizing. Copper tools and vessels were placed in the ground in certain localities and heated for a time by building fires over them. The result of this was that the copper took on a light yellow color or even became "bleached." The ground in which this process was performed, although the ancients were not aware of it, contained zinc and their treatment of the copper was practically dry galvanizing or sherardizing, the zinc of the earth becoming alloyed with the copper.

The modern process of dry galvanizing was discovered by accident. An officer of the British navy named Simpson was detailed to work out a method of case-hardening armor plate without infringing on the Harvey patents. Experiments under his direction were being carried out in the laboratories of a noted English metallurgist, Sherard Cowper-Cowles. Mr. Cowper-Coles received a sample of zinc dust to test for use in making an electrolyte for zinc plating, and in the course of his experiments he placed a piece of steel in this zinc dust in a case-hardening oven and heated it up to see if it would have any hardening effect on the steel. Upon removing his piece of steel from the oven he discovered that it was covered with a silvery coating of zinc, and on examining under a microscope, found that the zinc had penetrated the steel and alloyed with it.

Theory of Sherardizing

Sherardizing may be defined as a process of sublimation, occlusion and adhesion, when considered in connection with

the theory of irons. The process of passing directly from the solid to the gaseous state and from the gaseous direct to the solid state, in both cases stepping over the liquid state, is called sublimation.

The theory of sublimation and the "triple point" in connection with sublimation is fully defined and described in many elements of physics. It is a very well known fact that solids sublime. This is easily shown, for example, in the evaporation of ice when it is kept below its melting point. In the case of

AUTOMATIC POLISHER AT WORK ON MANDRELS

most solid substances this process is so slow at ordinary temperature that it cannot be detected. At ordinary temperature and pressure camphor, arsenic and many less familiar substances sublime. Solid carbon dioxide will volatilize at —79 deg. C. at atmospheric pressure without passing through the liquid state. Zinc as a solid may change into vapor without passing into the liquid state. For an exact definition of the physical condition of a body a knowledge of the values of all its variable properties is required. The three most important of these are temperature, pressure and volume occupied by unit mass of the substance. These are not independent of each other but are connected by a definite relation called the equation of state, which, in the simple state of perfect gases, takes the form of the gas law, which is the law of Boyle and Charles.

It is a well known fact that common metals are extremely porous. This is visible under a high power magnifying glass, as well as readily demonstrated by certain physical experiments. Thus, if an iron wire be placed in a vacuum tube and then heated to incandescence, as, for instance by passing a current through the wire, the pressure within the tube rises materially and gas is evolved for a very considerable time, indicating that iron (and practically all other metals), contain large volumes of gases. The condition of the metal may be graphically described as resembling a sponge with water.

Precipitation of a Vapor on Metal

When a porous solid is easily permeated by a gas and condensation on the surface of the pores of the solid takes place, it is called occlusion. An example of this can be seen in the absorption of 90 volumes of ammonia in one volume of charcoal. Spongy platinum will absorb about 250 times its own volume of hydrogen and will increase one-tenth of its volume. To produce such a condensation one would require a pressure of many thousand pounds per square inch. Nearly all metals absorb gases and, being heated, will allow them to pass through readily. An example of this is the fact that hydrogen will readily pass through heated iron.

When a gas is in contact with a solid, there are molecular forces drawing the particles together, and this produces a surface condensation of gas on the solid. An example of this is the difficulty in removing the last traces of air from a vacuum bulb due to the adhesion of the air on the surface. Another example is the frosting of window panes in irregular figures.

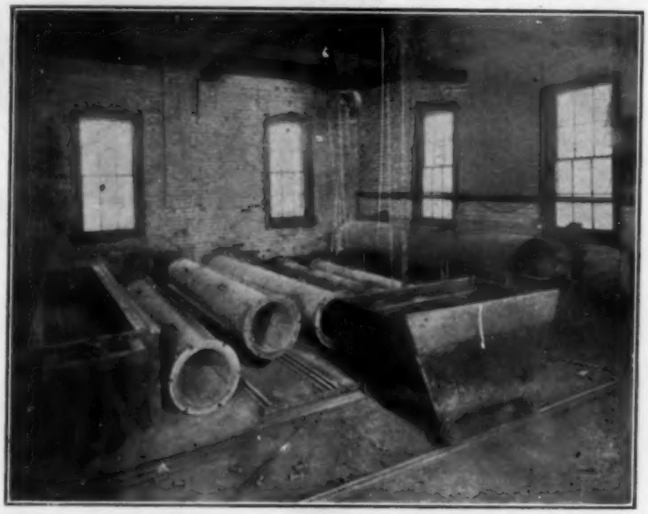
There also appears to be an electrical condition accompanying the evolution of gases from a metal inasmuch as the evolved gases usually contain a number of free ions. This is particularly the case if the temperature of the metal is high at the time the gases are given off. Naturally the exposed surface of the metal is the only portion which actively takes part in evolving gases, so that the larger the area of surface exposed the greater the evolution of gas, other conditions being equal.

A further fact, which is well established, is that the presence of free ions has a marked effect in producing a precipitation of a vapor or suspended matter in a gas. It follows, therefore, that if a metal be heated in the presence of a vapor under such conditions that the gases or vapors contained within the metal are in part liberated; then, as the liberated gases or vapors contain some free ions, they will cause the precipitations within the pores of the metal and on the surface layer of a portion of the external vapor in which the metal is heated.

Now it is a well known fact that all materials have a definite vapor tension, depending mainly on the nature of the material, the nature of the surrounding materials, the temperature and the pressure. It, therefore, follows that under all conditions all substances are surrounded by a certain amount of their own vapor. The vapor can be increased in amount by increasing the temperature and decreasing the pressure.

Methods of Producing Zinc Vapor

Zinc vapor can be produced in several ways from zinc. If molten zinc is boiled in a reducing atmosphere, vapor is given off rapidly and if heated iron is brought in contact with this vapor sherardizing would take place. This method, however, is neither convenient nor economical because of the waste of zinc. The most practical and economical method is to use zinc dust, which is obtained as a by-product of a zinc smelter. This dust is practically amorphous and each particle consists



SHERARDIZING OVENS AND DRUMS

of a small inner particle of more or less pure zinc surrounded by a thin coating of zinc oxide.

According to a well known fact, the vapor tension is higher for small particles than for large. It is thus desirable that the zinc be in a very finely divided condition, for the extent or degree of penetration of the zinc vapor in the iron depends

upon its vapor tension. It is also desirable that there be as little impurity in the zinc as possible, for not only the zinc, but also the impurities, such as lead, cadmium, etc., will give off vapors, and the combined vapor tension of the mixture would generally be less than that for pure zinc.

As said before, the zinc particles are surrounded by a coating of zinc oxide. This oxide is very inert compared to metallic zinc and has a high melting point. It therefore is very advantageous in the process because it not only keeps the particles of zinc separated, but allows the spheres of vapor surrounding them to act independently with a high vapor tension and permits the temperature to be raised beyond the melting

TURNING DOWN PLUG BLANK

point of zinc without its becoming molten. Therefore, the percentage of inert material in the zinc dust plays an important part in the process.

Preparation of Tubing

For sherardizing inner tube mandrels, cold drawn seamless steel tubing has been found most satisfactory. This tubing is received from its manufacturers in ten-foot lengths, in suitable thicknesses. It is carefully inspected and placed in racks until needed.

Before being sherardized the surface of the tubing must, of course, be thoroughly polished, cleaned and made free from scale, rust, grease, dirt or other impurities. This is accomplished by "pickling," grinding and polishing.

The "picking" process for sherardizing is carried out in eight tanks set in a row in groups of two. The first tank contains potash, the second hot water, the third hydrofluoric acid, the fourth hot water, the fifth sulphuric acid, the sixth hot water, the seventh lime water and the eighth hot water. Each tank is equipped with a steam and water inlet and a drain, while the hot water tanks also have overflow pipes.

The grinding and polishing operations are carried out with grinding machines and automatic polishing machines; the former using resilient abrasive wheels, the latter using an abrasive coated endless belt. The grinding machines are fed by hand to insure the removal of all holes and uneven spots. The polishing machines have automatic feeds, the work of the operator being limited to placing the mandrels in one end of the machine and removing them at the other.

For "pickling" a solution of 38 pounds of lye to each gallon of water is used, and care is taken to constantly skim off the washed-off oil and fat that floats to the surface of the bath. When the solution becomes greenish or brownish in color it is renewed. After pickling, the mandrels are carefully dried.

Zinc Dust Used

For sherardizing tube poles, the New Haven Sherardizing Company, in whose factory the material for this article was gathered, uses a zinc dust of special production, bolted through the finest wire mesh and having an unusually high grade metal content that makes possible a very firm alloy with the underlying metal, which will not corrode, even after considerable of the surface has worn off. This special grade zinc dust is imported; it is obtained from the hoods of zinc smelters, upon which it is formed by the condensation of zinc vapors. It is not ground commercial zinc. It usually contains about 85 per cent pure zinc and 10 per cent zinc oxide. The latter is distributed evenly throughout the mass and prevents the dust from becoming pasty at the high temperature required for sherardizing.

Zinc dust is one of the main features in producing good sherardizing. It must be free of lumps and as free of moisture as possible. It should be stored in galvanized cans and kept covered when not being used.

Loading the Drums

After grinding, polishing and pickling, the mandrels are placed in cylindrical steel drums, with alternate layers of zinc dust, room being allowed inside the drum for any expansion that might take place. About 100 pounds of zinc dust are used to each 200 pounds of tubing. When the drum is loaded, it is sealed with a dust-tight, but not air-tight cover and taken to the furnace.

Heating

Various kinds of furnaces are used for heating the drums filled with poles and zinc dust, at the New Haven plant gas heated furnaces have now superseded the type heated by coke.

These gas furnaces are trough-like constructions, strongly insulated and are provided with a cover. When placed in them the drum is held between centers and can be revolved by a hand-crank during the heat.

Temperature and time are very important factors in sherardizing and depend upon each other. They also depend upon the choice and quality of the zinc dust and on the requirements and physical properties of the material treated. From five to seven hours at a temperature of about 700 degrees C. is required for tube mandrels. Pyrometers, heat controlling and recording devices are used.

The importance of temperature will be more thoroughly understood when it is said that, with the increase of temperature, the steel increases its power for absorbing zinc vapor and that

SPLICING AND WELDING OLD MANDRELS

likewise the vapor tension of zinc increases with the temperature.

Time also is an important factor since it must vary with the size of the mandrels under treatment. The importance of time applies not only to the duration of the actual heating but also to the duration of cooling, sherardizing not being confined to any one particular temperature, but taking place over a wide range of temperatures.

Motion During Sherardizing

The mandrels under treatment must be thoroughly mixed with zinc dust and to accomplish this the drums have to be revolved in different directions from time to time during the

heat. Too much rotating, however, is undesirable for it makes the product appear dark and dusty.

After being removed from the furnaces, the drums containing the mandrels are hoisted out and rolled on to a cooling platform and allowed to cool from 12 to 16 hours before being opened, as the introduction of oxygen to the zinc while in a superheated state would destroy it by oxidation.

After "cooling out" the drums are opened, the mandrels removed and placed in racks, ready to be polished and finished, on the automatic polishing machines before mentioned.

Plugging

Most rubber manufacturers now prefer to have their tube mandrels plugged. The inserting of plugs with square holes that fit the centres of the wrapping lathes eliminates the necessity of chucking in the wrapping operation and overcomes the ragged edges and splitting so common where mandrels are used without plugs, it also saves much time and labor in the handling of the poles in the rubber factory. The plugs are driven into the ends of the mandrels and held in place by countersunk and riveted keys.

Reclaiming Old Mandrels

Where mandrels have been used in plain steel, and the exposed ends have become pitted and useless, about 75 per cent of them can be saved by cutting off the broken and pitted ends and splicing and welding several sections together.

This process consists in sawing off the bad ends with a power hack-saw, cutting short lengths from good pieces of tubing of the same gauge, and inserting a short splice. The splices are then welded with an oxy-acetylene torch. The reclaimed mandrel is just as strong at its splices as at any other part.

New Developments

The New Haven company has been experimenting for some time with highly polished sherardized rubber molds. The object being to obtain a surface to which soap and rubber will not adhere and to thus produce molds that will not require costly cleaning after each heat.

A considerable degree of success in this direction has already been attained in the case of the three-piece molds used in curing rubber heels and tire molds are now subjects of experiments.

If this new development proves successful, and the results already obtained hold out this hope, the heavy weight of tire molds, which puts out of the question their shipment to a distant sherardizing plant, will no doubt lead to the installation of sherardizing units in all rubber factories having sufficient work of this kind to justify the outlay.

Prosperity is Here—Let's Go

By Theodore Wood *

When Irvin Cobb shook from off his feet the dust of his old Kentucky home and landed in little old New York, hardly a ripple was caused on the surface of the literary waters, and whatever uneasiness over their jobs may have been felt by the members of the newspaper fraternity in Park Row, was carefully concealed.

So, Irvin wrote a score or more of letters, which he sent, with his characteristic impartiality, to all the principal newspapers in the city. His letter said in effect—"I am Irvin Cobb from Paducah, Kentucky. I have arrived. I have a room at the Astor House fairly handy to Park Row. If you wish to connect yourself with the man who is destined to become America's greatest writer of fiction, speak quickly or else blame yourself alone for the lost opportunity."

The result of this modest literary effort was that the return mail brought to Cobb an offer to join the "Boys" on what was probably the most ably managed paper in New York at the time.

Some time ago another "Party" arrived in our midst, and many of us were so busy settling our shattered contracts with the War Department and quieting our shell-shocked business nerves, that we failed to notice his arrival. This Party's baggage was plainly initialed "P. B.", and many men who saw them through their blue glasses, thought the initials stood for Poor Business.

Over in Jersey, there is a man who, better than any one of us, can watch a set of forces at work on an object, and predict both the strength and intensity of the resultant motion of the object. Mr. Edison came out of his laboratory, looked the party over, and said to American business men: "Gentlemen, you have this 'doped out' all wrong. This party's name is not Poor Business. Those initials stand for 'Prosperity Boom.' I have seen him before on several occasions. Let's go ahead!"

Since that time, 90% of the big business men in the country (and by this I mean the big men in business of whatever size in the country), have filled up their tanks, strapped on a couple of new spare tires, turned their registration numbers upside down, stepped on the gas, and are hitting it up along Prosperity Highway close behind the mysterious arrival.

The financial writers tell us that all the elements essential for prosperity are now present; the ticker shows us what the speculator thinks about the trend of securities; statisticians tell us pertinent facts about America's balance sheet, bills payable, and bills receivable; hotel clerks from Portland, Maine, to El Centro, California, are hanging out the "Standing Room Only" sign; Burleson permits enough news to trickle in from abroad to enable us to guess that the consummation of peace is fairly near; the old proverb even intimates that after the storm, the sun may be expected to shine. Gentlemen, PROSPERITY, like our friend, Irvin Cobb, HAS ARRIVED!

To those of us who are up ahead in the procession on Prosperity Highway (which by the way is marked with a red, white and blue band on the telegraph posts), the air is fine and the view unsurpassed. For those at the rear of the procession, the view and the air will be there, but there will also be a lot of dust from the other fellows' wheels, and smoke and smell from their exhausts.

Allow me to suggest for us all a motto borrowed from the doughboy and the leatherneck—a motto which will carry us, as it did them, through the wire and well up to our objective—ZERO HOUR! LET'S GO!

* Mr. Wood who is secretary of the R. J. Caldwell Company, tire fabric manufacturers, New York City, made this talk before the Manufacturers' Association, Berk County, Pa.

Information Exchange

Tire Wrapping Paper

Inquiry No. 111—Please let us know where we can obtain heavy paper with threads inserted in it, waterproofed, and cut in widths suitable for wrapping pneumatic tire casings for shipping.

Answer: The paper you undoubtedly want is that made by the Sealpack Mills, Boston, Mass. This concern is represented in New York City by M. Hambro, 39 Great Jones Street.

Red Massai Rubber

Inquiry No. 112—We are manufacturers of adhesive cements for all purposes and are in the market for red Massai rubber. Will you kindly give us the names and addresses of some reliable importers of this variety of crude rubber.

Answer: You can obtain Red Massai rubber from the following concerns: F. R. Henderson & Company, Charles E. Wood, Sweeney & Company, all in New York City, and Ernest Jacoby, Boston, Mass.

Ostromyslenski's Vulcanization Without Sulphur

By W. Bunschoten

In 1915 several papers were published by Ostromyslenski[1] on the curing of rubber without sulphur.

Up to that time sulphur was considered as the only substance which could affect vulcanization.

Ostromyslenski, however, was inclined to presume that the sulphur could be replaced by other substances, which both in physical as well as in chemical respect resembled it as much as possible. As to the chemical properties he aimed at a substance which could combine with an unsaturated hydrocarbon, and which also would prove able to oxidize æthylen groups. As to the physical properties of the new material, attention had to be paid to its melting point, its vapour tension at the vulcanization temperature, and its solubility in caoutchouc.

The first tests Ostromylenski carried out were made with sym.-trinitrobenzene. This has a melting point of 118 degrees C., situated, therefore, close to that of sulphur, while the density does not differ much from that of sulphur.

Also, as in the case with sulphur, poly-nitro-compounds occur in several modifications. The action of sym.-trinitrobenzene is moreover oxidizing, and it is apt to unite with ease with æthylen derivates. He really succeeded in obtaining a well-cured product, which resembled exteriorily as well as in physical properties, rubber vulcanized with sulphur. Good results were also obtained with nitrobenzene, dinitrobenzene, trinitronaphthalene, tetranitronaphalene, picric acid, picryl chloride, nitrocyclohexane and artifical musk.

The results attained with these different nitro compounds led Ostromyslenski to be convinced that the oxidizing capacity of the vulcanizing substance was of primary influence on the curing process, and not so much the property to combine with æthylen derivates. Thus, whereas picric acid and picryl chloride yield very stable products with æthylen compounds, but only show an initial vulcanization, while mono and dinitrobenzene, which entirely miss the property of combining with æthylen derivates, prove to cure well.

When after this he tried other oxidizing compounds without the nitro group, e. g., benzoyl peroxide, he likewise obtained excellent results, even at a much lower temperature than that at which the usual curing with sulphur occurs.

Undoubtedly Ostromyslenski's discovery must be regarded as very important, both from the scientific as well as a technical point of view. It will be of considerable influence on the prevailing conception of the nature of the vulcanization process, and no extensive arguments are necessary to show that eventually it may have no small importance on the rubber industry. For it might be possible that other compounds, e. g., oxidizing mediums within the financial reach of the rubber manufacturers, might be used as curing agents, taking the place of sulphur.

However, Ostromyslenski's publications had a very weak side, for the degree of vulcanization was only denoted in such terms as " vulcanized, insufficiently, entirely, nearly entirely," etc. while the mechanical properties of the " cured " products were not measured at all. Stevens[2] repeated these experiments with some of the compounds mentioned without neglecting to determine the mechanical properties of the " cured " products obtained.

What follows are the results of tests made at the Netherlands Government Institute for Advising the Rubber Trade and the Rubber Industry. The vulcanizing experiments were all carried out in an oil bath.[3]

At first mixtures were tried consisting only of raw rubber and nitrobenzene and of raw rubber and m.-dinitrobenzene. Ostromyslenski mentions that he obtained well cured products with such mixtures, but the Institute could not obtain satisfactory results, which is in agreement with what Stevens mentions. After curing for increasing periods, viz., 30, 60 and 90 minutes at 147 degrees C., the resulting product did not make the impression of being vulcanized, and still dissolved in a few hours in benzene.

It now seemed of importance to test whether accelerators used in the normal sulphur curing process would show catalytic action in a mixture without sulphur and thus lead to a well vulcanized product. In order to carry this out, mixtures were made of the following composition: 100 parts raw rubber, 4 parts dinitrobenzene, 1 part accelerene, or instead of the latter 1 part vulcanite, and these cured for ½, 1, 1½, 2, 2½ and 3 hours at 147 degrees C. in the oil baths. The result was that the products were not vulcanized either and that here these accelerators miss their effect.

Now Ostromyslenki had found that different metallic oxides which accelerate the normal vulcanization process, in contradistinction to the above-named organic accelerators, do promote the curing without sulphur. Stevens[4] confirms that with mixtures of nitro compounds to which litharge has been added vulcanization does take place. The following tests were all made with the addition of litharge, and it was indeed found that vulcanization resulted.

In order to judge as to the behavior of various rubbers with reference to this new curing method, two different raw rubbers were used, viz., a slowly vulcanizing crepe and a fast vulcanizing sheet, the vulcanization coefficient (the quality of combined sulphur calculated on 100 parts raw rubber, after standard vulcanization,[5] 7½ per cent. sulphur plus 92½ per cent. rubber, heated for 1½ hours at 50 lb. gauge pressure) of which amounted respectively to 2.6 and 4.5. With these rubbers the following mixtures were made:—

100 parts raw rubber.
8 parts litharge, and
4 parts nitrobenzene.

And these mixtures vulcanized for increasing periods in the oil bath at 147 degrees C. (corresponding with 50 lb. gauge pressure on curing in the autoclave). Tensile tests were then made with the Schopper machine from the rings punched from the sheets obtained,[6] and the results shown in Table I.

TABLE I.

Curing tests without sulphur.—Mix: 100 parts raw rubber, 8 parts litharge, and 4 parts nitrobenzene.

Time of Cure Minutes.	Smoked Sheet. Vulc. Coeff. = 4.5.		First Latex Crepe Vulc. Coeff. = 2.6.	
	Breaking Load kgms. per cm.2	Elongation at Break %	Breaking Load kgms. per cm.2	Elongation at Break %
30	0.5	697	——	——
45	14.5	982	——	—— *
60	20.4	906	——	——
90	35.8	825	10.4	610
120	27.8	874	22	704

* Insufficiently vulcanized.

These figures show that curing has duly taken place, but that the mechanical properties are much inferior to those obtained with the normal vulcanization methods. Judging also by the exterior and the course of the elongation curves lead to the conclusion that all the test pieces had been strongly under-vulcanized. That, however, curing did take place, follows also from the fact that the product was insoluble in benzene, al-

[1] Journ. Russian Phys. Chem. Soc. 47, 1453—1471 (1915), *India Rubber Journal*, 52, 467—471 (1916).

[2] Journ. Soc. Chem. Ind. 36, 107 (1917).

[3] Communications of the Netherland Government Institute for Advising the Rubber Trade and the Rubber Industry, Part V., Chapter 37, p. 138.

[4] Le Caoutchouc et la Gutta-Percha, 14, 1925 (1917).

[5] Communications of the Netherland Government Institute for Advising the Rubber Trade and the Rubber Industry, Part V., Chapter 36, p. 136.

[6] Do., Part V., Chapter 40, p. 151.

though strong swelling took place. It can further be seen from Table I. that the sheet on being normally cured, having a much greater velocity of vulcanization than the crepe, showed this same disposition with the abnormal vulcanization.

Similar curing tests were then carried out with m.-dinitrobenzene in the same proportions and at the same temperature of cure.

The products which were obtained now did not show any swelling in benzene, thus proving that complete curing had taken place, which also is made evident by the results of the mechanical tests laid down in Table II.

These would tend to show that already after 10 to 15 minutes the sheet exhibits its best mechanical properties, which decline on prolonged curing.

Initially the rubber, on increasing the time of cure, becomes somewhat stiffer. After some time this ceases, however, and the curves of the stress-strain diagram which the Schopper machine draws automatically, begin to run nearly parallel. If the vulcanization be still continued, then the only consequence is that the endpoint becomes situated lower on the curve, in other words, the breaking load is diminished.

Table II. makes it evident that the rubber with the highest vulcanization coefficient is the fastest vulcanizer. When experimenting further, however, it was shown that this may not be taken as a rule. So, for instance, a sheet with a vulcanization coefficient of 3.5 cured less fast than the above-named crepe with a vulcanization coefficient of 2.6.

With the previous tests the quantities of litharge and of m.-dinitrobenzene were the same.

TABLE II.

Curing tests without sulphur.—Mix. : 100 parts raw rubber, 8 parts litharge, and 4 parts m.-dinitrobenzene.

	—Smoked Sheet.— Vule. Coeff.=4.5.			—First Latex crepe.— Vule. Coeff.=2.6.		
Time of cure. Minutes.	Breaking load, kgms. per cm².	Elongation at break, %	Load for an elongation of 600 % kgms. per cm².	Breaking load, kgms. per cm².	Elongation at break, %.	Load for an elongation of 600% kgms. per cm².
10	103	798	32	—*	—*	—*
15	105	737	45	82.5	742	38
25	87	663	54	79.5	675	57
30	92	741	—	86	742	62
45	62.5	662	45	73.5	641	66
60	51	640	50	73.5	629	59
75	52.5	616	48	74	622	57
90	39.5	515	—	59.5	603	—
120	13.4	352	—	58	612	—

* Insufficiently vulcanized.

Now some mixtures were cured with increasing quantities of these compounds in order to note the influence on the velocity of vulcanization and the mechanical properties of the product.

Mixtures were prepared consisting of 100 parts sheet rubber (V.C. equals 4.5), 8 parts litharge, and respectively 1, 2, 3, 4, 6 and 8 parts m.-dinitrobenzene and also of 100 parts sheet rubber (V.C. equals 4.5), 4 parts m.-dinitrobenzene, and respectively 2, 5, 8 and 11 parts litharge.

The vulcanization was carried out for increasing periods in the oil bath at 147 degrees C.

The results of the mechanical tests can be seen from Table III., from which it is made evident that with increasing quantities of m.-dinitrobenzene and litharge the velocity of vulcanization is increased.

After this the influence of the curing temperature was gone into.

For this purpose a mixture was prepared consisting of 100 parts raw rubber (V.C. equals 4.5), 8 parts litharge, and 3 parts m.-dinitrobenzene, which was heated for 5, 10, 20, and 60 minutes in the oil bath at 137 degrees, 143 degrees 147 degrees, 152 degrees, and 157 degrees C. The results are shown in Table IV.

As is made evident by the figures found for the breaking load after five minutes' cure, curing without sulphur just as well as with sulphur takes place at a higher temperature much faster than at a low one.

On the mechanical properties of the cured product the temperature does not seem to have much influence.

The conclusion might be drawn from the figures for the mechanical properties in the tests mentioned that in practice this method of curing could, whenever necessary, replace vulcanization with sulphur.

However, the quality of the products vulcanized with dinitrobenzene and litharge, declines so rapidly, that in practice an application may not be thought of. Already, after one month, and the rings made for the tensile tests on the Schopper machine, having shown a few days after vulcanization a tensile strength of 40 kgms., could with ease be pulled to pieces by hand. It is still not known to what alteration in properties this must be ascribed. Probably not to oxidation, because the acetone extract was, even after six months, about equal to that of the raw rubber[1]. The product remained also entirely insoluble in benzene.

TABLE III.

Influence of increasing quantities of m.-dinitrobenzene and litharge on the mechanical properties and the velocity of vulcanization.

		Time of Cure. —10 minutes—		—20 minutes—		—60 minutes—	
Composition of the mixture.		Breaking load, kgms. per cm².	Elongation at break, %.	Breaking load, kgms. per cm².	Elongation at break, %.	Breaking load, kgms. per cm².	Elongation at break, %.
100 pts. rubber, 8 pts. litharge and 100 pts. rubber	1 pt. m.-dinitrobenzene	59	974	—	—	76.5	923
	2 pts. m.-dinitrobenzene	70.5	938	108	870	75	773
	3 pts. m.-dinitrobenzene	100	1005	106	818	79	715
	4 pts. m.-dinitrobenzene	103	798	—	—	51	640
	6 pts. m.-dinitrobenzene	—	—	88	700	73	598
	8 pts. m.-dinitrobenzene	84	773	114	698	58	500
	2 pts. litharge	—*	—*	27	846	81	741
	5 pts. litharge	88	973	111	812	96	725
4 pts. m.-dinitrobenzene and	8 pts. litharge	193	798	—	—	51	640
	11 pts. litharge	95	922	78	700	86	634
	11 pts. litharge	95	922	78	700	86	634

* Insufficiently vulcanized.

TABLE IV.

Influence of the temperature of cure on the mechanical properties. Composition of the mixture: 100 parts raw rubber (V.C. equals 4.5), 8 parts litharge, and 3 parts m.-dinitrobenzene.

	Time of cure. —5 minutes—		—10 minutes—		—20 minutes—		—60 minutes—	
Temperature of cure	Breaking load, kgms. per cm².	Elongation at break, %	Breaking load, kgms. per cm².	Elongation at break, %	Breaking load, kgms. per cm².	Elongation at break, %	Breaking load, kgms. per cm²	Elongation at break, %
137° C.	7.4	650	68	908	99	845	85	727
142° C.	8.6	693	117	970	94	793	60	682
147° C.	33.4	931	95	890	127	847	79	763
152° C.	40	926	88	823	—	—	—	—
157° C.	86	940	94	808	84	760	40	710

Mention should also be made that several of the test pieces (especially those having been cured for a short time and at a slow temperature) showed after some days a white deposit, which after having been purified by sublimation could be identified as m.-dinitrobenzene, as its melting point was 89 degrees C. (the melting point of m.-dinitrobenzene), and did not change mixed with it.

A test piece from the mixture of 100 parts rubber, 2 parts litharge and 4 parts dinitrobenzene, having been vulcanized for 60 minutes at 147 degrees C., was covered with a small layer of beautiful yellow needles. There was not enough of it to identify closer.

Other tests were also carried out to see whether ebonite could be prepared by curing with m.-dinitrobenzene.

[1] From this it is also made evident that, in agreement with Stevens' communications (l.c.), very little dinitrobenzene remains after vulcanization.

In order to carry this out, mixtures were made of 100 parts raw rubber, 8 parts litharge, and respectively 10, 15 and 20 parts m.-dinitrobenzene. These mixtures were vulcanized during 1, 2 and 3 hours in the oil bath, at 147 degrees C. In no case was ebonite formed, but a product not unlike leather was obtained, which could easily be pulled to pieces by hand. All test pieces were covered with a layer of yellow crystals. After these had been purified by sublimination, they could be identified as m.nitro-aniline. The melting point was 113 degrees C., and remained so after mixing with m.-nitro-aniline

As Ostromyslenski regards vulcanization as a kind of oxidation, it was found useful to investigate the curing action of several inorganic oxidation agents[8] such as arsensic acid, potassium persulphate, chloride of lime, potassium bichromate, potassium permanganate, potassium chloride, potassium nitrate, sodium nitrate, manganese peroxide, and potassium ferricyanide.

This was carried out by making mixtures of 100 grms. raw rubber and 4 grms. of these oxidation agents, and heating in the oil bath for ½ hour to 1 hour at 147 degrees C.

Judging by the exterior showed that with all the compounds obtained, a beginning of vulcanization took place, but in no case could a well cured product be said to have resulted. All products dissolved after standing a few days in benzene.

Still again, going by the exterior and the rate of dissolving in benzene, all mixtures had been farther cured than those whereby raw rubber had been mixed with nitro and dinitrobenzene, without the addition of litharge. It seems therefore possible that also with these compounds, with the aid of a suitable accelerator, good vulcanization could be obtained.

Finally, tests were made on the influence of mono and dinitrobenzene on the viscosity of rubber solutions.

The supposition seemed obvious that mono and dinitrobenzene raise the degree of polymerization of the rubber, and that through this the vulcanization could take place. A similar polymerization could also occur in a benzene solution, which would then go hand in hand with an increase in viscosity.

Initially a solution was made from 1 gr. rubber and 40 mgrs. dinitrobenzene in 100 c.c. benzene. Rubber and benzene were thus here in the same ratio as in the mixtures of Table II. The influence of such a small quantity of dinitrobenzene appeared, however, to be trifling.

Then tests were made with a solution to which more dinitrobenzene was added, viz., a solution of 1 gr. rubber and 400 mgrs. dinitrobenzene in 100 c.c. benzene.

This solution remained for some days in the dark in a brown bottle, after which the viscosity was measured both in the light and in the dark. The results are stated in Table V.

TABLE V.

Influence of m.—Dinitrobenzene on the Viscosity of Rubber Solutions at the Temperature of the Room.

Time of Running of the Pure Rubber Solution.	Time of Running of the Solution after adding 40% Dinitrobenzene (calculated on the Rubber) and after standing for 3 days in the Dark.	
	Measuring in the Light.	Measuring in the Dark.
8 min. 36 sec.	7 min. 55 sec.	8 min. 57 sec.
8 min. 36 sec.	6 min. 37 sec.	8 min. 54 sec.
8 min. 36 sec.	6 min. 20 sec.	8 min. 50 sec.
After 24 hours, 8 min. 31 sec.	After 24 hours, 2 min.	

These figures show that the viscosity of the rubber solution diminishes very rapidly under the influence of m.-dinitrobenzene in the light, even so rapidly that it was impossible to measure the viscosity in the light, as during filling of the viscometer it had already declined to such an extent that one finds a decrease, although an increase takes place, as is found from a measurement in the dark.

The same tests were then repeated after the rubber solution had been heated for ½ hour at 65 degrees C., after adding dinitrobenzene, the results of which can be seen in Table VI.

TABLE VI.

Influence of m—Dinitrobenzene on the Vicosity of Rubber Solutions at 65° C.

Time of Running of the Pure Rubber Solution (1 gr. Rubber on 100 c. c. Benzene).	Time of Running of the Solution after adding 40% Dinitrobenzene (calculated on the Rubber) and Heating for ½ hour at 65° C.	
	Measuring in the Light.	Measuring in the Dark.
8 min. 36 sec.	8 min. 2 sec.	9 min. 41 sec.
8 min. 36 sec.	7 min. 13 sec.	9 min. 26 sec.
8 min. 36 sec.	6 min. 32 sec.	
After 24 hours,	6 min. 3 sec.	
8 min. 31 sec.	After 24 hours,	
	1 min. 56 sec.	

The concentration of the solution before and after heating was the same.

The figures show that the viscosity is increased under the influence of dinitrobenzene while heating is applied and again declines rapidly in the light.

From this one would be led to assume that dinitrobenzene assists both the depolymerization of rubber solutions by light as well as the polymerization by heat. The vulcanization with dinitrobenzene could therefore be regarded as a polymerization by heating.

Analogous with this the vulcanization with sulphur could be looked at as an acceleration of polymerization, as was already assumed by Bernstein[9] and Kirchof,[10] while in addition, a combining of sulphur would have to be assumed to take the place as a secondary process, either chemically or physically.[11]

[8] Some of these compounds have already been mentioned by Parkes in his patent for cold vulcanization (Ditmar, Die Technologie des Kautschuks, Vienna, 1915, 83).

[9] Bernstein, The Rubber Industry (London, 1914), 164.

[10] Koll. Zeitschr. 14, 35 (1914).

[11] G. Van Iterson, Communications of the Netherland Government Institute for Advising the Rubber Trade and the Rubber Industry, Part VII., page 239, *India Rubber Journal*, 56 (1918), 455.

New Publications

HOW BUSINESS WITH FOREIGN COUNTRIES IS FINANCED. Booklet; fifty-eight pages, 6½ x 9½ inches. Published by the Guaranty Trust Company of New York, New York City.
Is intended specially for exporters and importers, and others having business or financial relations with foreign countries.

This booklet contains twenty-eight reproductions of specimen forms of drafts, letters of credit, bills of lading, invoices, and other documents generally used in connection with the financing of exports and imports. Explanatory notes accompany each illustration and features in the documents of particular importance are noted. The use of the documents is also explained when that seems necessary. Special attention is given to those which bear directly upon the development of dollar exchange. The booklet is printed in attractive type upon coated paper and is carefully indexed. At the end there is a table of currencies of various countries and their value in United States dollars. This booklet is not for sale, but will be sent on request to manufacturers, shippers and others interested in foreign trade.

OUR PUBLIC DEBT. By Harvey E. Fisk. One hundred and twenty-six 5 x 7-inch pages; card board binding. Published by the Bankers Trust Company, New York City.

This book has been prepared from a fresh study of original data and it is claimed to be the only publication giving a complete historical and descriptive account of the public debt of the United States. It is divided into three parts; the third part containing tables of Liberty Bond values which will be generally appreciated by all dealers and large investors in Liberty Bonds. Copies of this book may be had upon application by anyone interested in the history of the public debt of the United States and in Liberty Bonds.

Products That Have Been Called "Synthetic Rubber"

By D. Repony

From the beginning of the rubber industry, men of many professions and walks of life have been attempting to produce rubber synthetically. Just as the alchemist has tried to make gold artificially, but with no success, so it appears to me that no more progress has been made toward producing synthetic rubber than has been made towards producing artificial gold. However, right at this point, I must state that I am not of those who do not believe in progress, for no man is more optimistic as to the future possibilities of scientific research than I am myself, but all our confidence in science and our good wishes for its advancement will not change the fact that real synthetic rubber today is nothing more than a dream of what the future may have in reserve for us. We, the rubber chemists, know the chemistry of rubber, and we also know that synthetic indigo, vaniline, oil of bitter almonds, and many other artificially made products have largely taken the place of materials that previously were exclusively organic products. We know of the numerous instances where the laboratory has taken the place of nature. Therefore, we do not doubt that it may be possible to produce rubber synthetically, though we have never seen any that was really synthetic. The principal trouble I have found with inventors of so-called "synthetic rubber" was that they were men who knew nothing about rubber.

If we believe in the possibility of making rubber synthetically, then we must also believe that all other substances at present supplied exclusively from organic sources will some day be produced in synthetic form. Yet, we seldom hear of men attempting to produce sugar, flour or other similar substances synthetically. It should not be more difficult to produce synthetic sugar than artificial rubber, for it is a well-known fact that both substances are composed of practically the same elements. This being the case it is interesting to devote a few moments of study to the reasons why most inventors concentrate their minds on synthetic rubber in preference to any other synthesis. The comparatively high price of rubber is, no doubt, one of the attractions, but is it not reasonable to see an even greater attraction in the fact that there exist so many substances that are not rubber but have somewhat similar physical properties as *caoutchouc*. Take for example fatty substitutes, glue in combination with glycerine and water, and the like. It is not surprising that a man knowing nothing about rubber should mistake these substances for synthetic rubber.

Nevertheless, inventors of "synthetic rubber" may be divided into two distinct classes. In the first class we will place those who know nothing about rubber and who, consequently, owe to their ignorance much of the mischief they cause. It will be found that the great majority of "synthetic rubber" inventors belong to this class.

To this same class belong also those who by accident, or in actually attempting to produce synthetic rubber, discover how to make out of oil and sulphur a fatty substitute, which they believe to be synthetic rubber. The next thing inventors of this type do is, of course, to find a capitalist to finance their discovery. The result of all this is that we rubber chemists have on our hands the difficult and ungrateful task of convincing, both the inventor and the financier, that their "discovery" is nothing new and that it is not synthetic rubber at all.

In the second class we will place downright swindlers. Besides the fatty substitutes above mentioned there appear from time to time all sorts of mixtures that are offered as synthetic rubber. I believe it will be of interest to tell of some of those that have been brought to my attention. In this connection I will not attempt to say whether the products are those of mistaken but sincere men or the work of fakers.

Not very long ago a well-known crude rubber broker sent me a sample of a liquid substance called "Kompo," asking my opinion as to whether or not this was synthetic rubber. The broker stated that this supposed synthetic rubber had been produced by using a German formula.

Upon analysis it was found that the "synthetic rubber" was nothing but a mixture of colophon rosin, linseed oil and diluted nitric acid.

Upon another occasion a gentleman came over to our factory and handed us a sample of "synthetic rubber," which, upon analysis, turned out to be a mixture of 28 per cent asphalt, 46 per cent glue, and 16 per cent water.

Still another sample of "synthetic rubber" submitted to us was proved by analysis to be a mixture of Pontianak and water.

The mails brought us one bright morning a small red ball accompanied by printed matter bearing a statement to this effect: "Here is a sample of real synthetic rubber. What is the use of paying a dollar a pound for natural rubber when we can make this for you at twenty cents a pound? If you want to become rich, buy shares, at $10.00 each, in our company." We analyzed this "synthetic rubber" and found it to be composed of 25 per cent glycerine, 5 per cent water, 5 per cent fatty substitute, 60 per cent glue, and 5 per cent antimony.

Our next experience was with two gentlemen who brought with them about ten pounds of a solid tacky substance, having a very disagreeable odor. They called it "Pavea Synthetic Rubber." We mixed this with a mineral filler and sulphur; the bad odor did finally disappear during the mixing, but not before it had made the mill man half sick.

The compound which resulted from this was much like a real rubber compound and the vulcanized sample turned out to be equal to a fine Para product. Upon analysis, however, we found that the "synthetic rubber" was nothing else but fine Para mixed with about 20 per cent of carbon tetrachloride.

The material being offered to us at 25 cents a pound, we gave the gentlemen a trial order for one ton. This was five years ago, and we are still waiting for the shipment.

Still another gentleman came to us with a sample of "synthetic," stating that he was a man of means who had been approached by the inventor of the product with a view to financing the enterprise. He wanted our opinion. We analyzed his sample and found it to contain 43 per cent guayule, 16 per cent glue, 12 per cent fatty substitute, 25 per cent whiting and 4 per cent sulphur. We had, therefore, an ordinary poor quality rubber compound. The gentleman was rather disappointed, but before leaving us he accused us of being jealous of not being the owners of this "synthetic rubber."

So much for humbug synthetic rubber. Let us now consider the results of scientific research on synthetic rubber. I must confess that all my efforts to obtain a sample of this class of "rubber" have been vain. I never have been able to obtain an ounce of it, though literature has told me that synthetic rubber has been obtained by polymerizing isoprene.

However, strange to say, all the information given out on this subject refers to this synthetic rubber very much from strictly chemical points of view. We are told that this "rubber" will form the ozonide and brom, or chlorine derivatives just as will natural rubber; but on the other hand, no information is given us as to whether or not this synthetic rubber can be vulcanized satisfactorily with sulphur, or whether its physical properties do or do not resemble those of the product of natural rubber.

From all this, I assume that by polymerization of isoprene some substance related to natural rubber is obtained, but real synthetic rubber is still a dream of what the future may have in reserve for us.

Personal Notes of the Trade

Secretary Vorhis Resigns and A. L. Viles Becomes Manager and Secretary of Rubber Association—New U. S. Tire Sales Manager—Weston Becomes Ajax Vice-President

New Rubber Association Manager

Albert L. Viles, who has been elected general manager and secretary of the Rubber Association of America, and officially took up his duties July 1, was born in Orland, Maine, December 20, 1881, of English ancestry, and passed his boyhood days in that town, until his parents moved, first to Dover, New Hampshire, and later

(C) Underwood & Underwood.

ALBERT L. VILES

to Auburn, N. Y. He received his early education in the country school at Orland, and in the public schools of Dover and Auburn.

His ambition being to be a railroad man, Mr. Viles entered the employ of the Lehigh Valley Railroad as a laborer in 1901, and thanks to his inborn ability and determination to succeed, he rose from one position to another, becoming successively telegrapher, station agent, accountant, assistant chief clerk in the superintendent's office, ticket agent and freight agent.

In 1910, Mr. Viles accepted the position of investigator with the Official Classification Committee of the railroad lines east of the Mississippi river, and subsequently became special agent and assistant to the chairman, specializing in commercial analysis of all lines of business throughout the Official Classification Territory in so far as related to freight classification. He prepared, presented and defended cases before the Interstate Commerce Commission, and also engaged in special investigation work for various member railroad lines in the Official Classification Territory.

In August, 1918, when it was decided by the Board of Directors of the Rubber Association to create a Traffic Division, Mr. Viles was called upon to take charge of the organization of this new and important branch of the Association's activities. He held this position efficiently until last April, when he resigned to become assistant manager of the Eastern Freight Inspection Bureau, United States Railroad Administration, in charge of freight inspection in Official Classification Territory. It is this important position that he has relinquished to return to the Rubber Association as its general manager and secretary.

Mr. Viles, though comparatively a newcomer in rubber circles, has already made a host of friends in the trade, which was not long to recognize his highly developed business and organizing abilities, happily combined with goodfellowship. He is a member of the Transportation Club and the Traffic Club, both of New York City, and also of the B. P. O. E.

Shugart Manages U. S. Tire Sales

George S. Shugart has been made general sales manager of the United States Tire Company, New York City, following the resignation of Joseph C. Weston, vice-president and director of sales, who has become vice-president of the Ajax Rubber Company, New York City.

Mr. Shugart has been serving as general manager of branches for about a year, having been brought from Chicago to succeed O. S. Tweedy when the latter went with the L. A. Young Industries, Inc., Detroit, Mich. He is a veteran tire man, having come to the United States Tire Company with the Morgan & Wright, which he joined 23 years ago. He is known to every member of the big organization.

With the change comes a general realignment of the United States Tire's sales organization, which now consists of C. J. Welch, assistant sales manager, J. H. Sheldon and H. W. Kuehne, assistant to general sales manager; F. I. Reynolds, manager distributors' sales; C. K. Whidden, manager solid truck tire sales; W. V. Logan, manager pneumatic truck tire sales; M. C. Stokes, manager cycle tire and accessories sales, and R. R. Drake, manager service department.

Most of these men have long been working in practically the same duties they will continue to perform, and it follows that the readjustment can in no sense be considered as a general "shake up." The field organizations are practically unaffected by the changes.

(C) Underwood & Underwood.

GEORGE S. SHUGART

Weston Ajax Vice-President

Joseph C. Weston has resigned from the position of vice-president and general sales manager of the United States Tire Company, New York City, to become vice-president of the Ajax Rubber Company, with headquarters in the same city.

In his new position Mr. Weston will practically direct the commercial end of the Ajax business, and will have, it is understood, free rein to put into effect his knowledge of all angles of tire merchandising.

Joseph Weston is one of the most popular men in the tire business, with which he has been connected practically all his

(C) Underwood & Underwood.

JOSEPH C. WESTON

life. Like George S. Shugart, who succeeds him at the United States Tire, he is a Morgan & Wright product, and came to automobile tires through the carriage and bicycle tire field. He was sales manager of the Morgan & Wright for a number of years before he joined the United States Tire.

The Ajax Rubber Company, whose business Mr. Weston will direct, is one of the most striking examples of success in the tire industry, in which it has become an important factor since its acquisition of the Racine Rubber Company, Racine, Wis., slightly over two years ago.

In addition to becoming an officer of the Ajax Rubber Company it is understood that Mr. Weston has acquired a substantial stock interest in the concern, the terms under which he enters his new enterprise having been made highly attractive in every way. His formal election to the vice-presidency occurred on June 17.

Secretary Vorhis Resigns

Harry S. Vorhis, for several years secretary and treasurer of the Rubber Association of America, has resigned to enter other business, and A. L. Viles, formerly manager of the Traffic Division of the Association, has been elected general manager and secretary of the Association. These changes became effective July 1.

H. T. Waller Enters Y. M. C. A.

(Special Akron Correspondence)

H. T. Waller, for several years head of the welfare department of The B. F. Goodrich Company, Akron, Ohio, has resigned to return to the Y. M. C. A. here as general secretary.

News of the Rubber Industry Expansion

Goodyear to Build California Factory—Goodrich Japanese Plant Extension Rumored—Dunlop Considering Establishment of American Factory—Devine Expanding—Syracuse Building—Galion Equipping Factory

Growth of Rubber Industry

(*Special Akron Correspondence*)

The growth of the rubber business has been so rapid in the past few months that the local plants of the larger companies cannot keep pace.

Hence the announcement that the Goodyear Tire & Rubber Company was to build a branch tire factory and cotton mill in Los Angeles, Cal., did not come as a surprise to those on the inside.

Credence is given a report that the Goodrich Company is planning a branch factory in Japan, although no official statement has been made. This report grows out of the issuance of passports to William T. Huston, a mechanical engineer for the Goodrich, to allow him to travel to Yokohama. It is said that he goes there to superintend the installation of rubber working machinery in the Japanese branch of the Goodrich, incorporated there as the Yokohama Rubber Company.

The Goodrich Company has had a plant in France for a number of years.

Announcement of intention to construct a $6,000,000 branch plant in Los Angeles, Cal., has just been made by the Goodyear Tire & Rubber Company. The company will spend $4,000,000 on a rubber manufacturing plant and $1,500,000 on cotton mills, according to announcement made in Los Angeles by Henry W. O'Melveny, attorney for the Goodyear Co. and the Pacific Cotton Mills Co.

John Breen, Akron real estate man, left for California to investigate the titles of the property secured.

Goodyear officials in this city today stated that the expansion on the western coast has long been contemplated. They declared that the status of the plant in this city will be in no way affected by the California development. Need of a branch plant located near the company's large Texas cotton plantations was responsible for the decision on the part of F. A. Seiberling, president of the company, and other officials to erect a great subsidiary plant in Los Angeles.

The Goodyear Company and the associated Pacific Cotton Mills Company have purchased Ascot Park and 480 acres of adjoining land in Los Angeles on which the great ranch factories will be located. It will also lay out a large tract to be known as Goodyear Park for a community of homes for its employes. Some of the best landscape architects in the country will supervise the improvement of the ground with boulevards, trees, shrubs and lawns and 800 fine homes will be built. Officers of the company declare that Goodyear Park, in Los Angeles, will be one of the best and most beautiful industrial residence districts in the world.

It is announced that 2,500 employes will handle the production of the western factory which will have a capacity of 3,000 tires a day and an annual business approximating $15,000,000. The subsidiary cotton plant, manufacturing fabric for the tires will have an annual business approximating $7,500,000 and will employ 1,200 operatives.

Los Angeles newspapers and civic leaders are frank in predicting that the location of the branch rubber plant there will be by far the most momentous industrial event that has ever occurred in that city. They point to utterances of Goodyear officials that the California plant will be expanded to four times the above capacities.

A veritable army of workmen will be employed at once, it is announced, to construct the big factory buildings and the homes to be erected in Goodyear Park.

Weighty and compelling reasons for building a great branch plant in California influenced F. A. Seiberling, president, and other officers of the Goodyear Company to take this epochal step. California and Arizona produce all the Egyptian and Pima cotton that can be grown in this country and these long staple varieties, with their superior tensile strength are absolutely essential in the manufacture of high grade automobile tires and other rubber products.

Across the Pacific Ocean in the Malay states, Java and other oriental lands are the world's greatest rubber producing districts. Rubber can be easily shipped direct across the ocean to the Los Angeles plant, Goodyear officials point out.

Excellent climatic conditions and the industrial freedom of the California city, which like Akron has few labor troubles, were other factors in causing Goodyear officials to choose Los Angeles rather than other competing cities for the location of a great branch plant.

While no announcements have been made to this effect, many civic leaders here believe that this announcement is merely a forerunner of the establishment of other branch plants in various sections of the country.

Goodyear officials emphasize that the establishment of the great branch factory in Los Angeles is in reality an asset to the local industry—a western outpost for the heavy production in this city.

Syracuse Rubber Company

The Syracuse Rubber Company, Syracuse, N. Y., recently incorporated at $3,000,000 to manufacture cord tires will locate its plant in De Witt, N. Y., a suburb of Syracuse. Belting, hose, and other mechanical goods will be added to the company's lines as soon as tire making is well under way.

The main building of the plant which has been designed, will be 200 x 600 feet and three stories high. Work on this unit will be started first. George Loggie is the general manager, and Richard P. Byrne, is director and attorney of the concern.

Galion Rubber Installing

The Galion Rubber Company, Galion, Ohio, recently incorporated for $25,000, is now installing equipment in its factory, which was formerly known as the Flat-iron Building. A new boiler and motors are already in place. E. de la Croix, formerly of the Scioto Rubber Company, Columbus, Ohio, is the general manager of the new concern.

Needham Enlarging

The Needham Tire Company, Charles River, Mass., is adding 13,000 square feet of manufacturing floor space to its plant; also a 250 hp. boiler and 150-foot smoke stack.

Dunlop May Establish Here

Negotiations on the part of the Dunlop Rubber Company, Ltd., Birmingham, England, to bring the Dunlop name again into prominence in the American market are actively under way. A mission of three representatives of the big British concern is in this country, headed by George DuCros, youngest of the family that founded the large enterprise. With him are Dr. J. V. Worthington and F. C. Baisley. It is understood that the group is working on two plans, either to found an entirely new company and build a new plant, or to acquire facilities already existing. One or two of the more prominent companies have already been approached with this end in view.

This would be the second venture of the company into this market. Some twenty years ago there was an American company which, under the leadership of Kirk Brown, became a considerable factor in the bicycle tire business of that time. Conditions today are materially different, however, and in some quarters it is regarded as an open question whether the British name alone would carry sufficient value to give it the place that it has won in markets where it has been established longer. The manufacturing and merchandising of tires, it is pointed out, involves more than strong financial backing, such as the Dunlop interests have in large quantities.

With American tire companies strongly entrenched in the field, the road for a new company would seem at best not altogether an easy one. The British company, however, through its subsidiaries, does a big volume of business throughout the Empire, in fact, all over the world, except in the United States. The export business, which could be handled from a plant in this country, might therefore prove to be an important factor.

J. P. Devine Expanding

Increased business during the past four years has compelled the J. P. Devine Company, manufacturers of Vacuum Drying Apparatus, Vacuum Evaporating Apparatus and Chemical Apparatus, to build several additions on to its already large plant, located at 1372 Clinton Street, Buffalo, New York.

One of these additions constructed of steel work and brick with the most improved light and ventilating systems, 30 ft x 100 ft. in size, has just been completed and is housing the Vacuum Pump Assembly Department.

Another addition, 90 ft. x 100 ft. in size of the same material and general plan, is now in course of construction and will enlarge the general assembling department.

The foundations for a third addition, a new foundry, have been laid and the steel construction is proceeding. This foundry will be 90 ft. x 225 ft. in size and will be fully equipped throughout with new machinery to be purchased. This new foundry will give this concern greatly increased facilities for casting large commercial units.

Employment will be furnished for about 200 more men.

The general contractors are Chas. Berrick & Sons Company, Buffalo, New York, and the steel contractor is the Lackawanna Bridge Company, Buffalo, New York. About two hundred tons of steel will be used in these several additions. The total investment represented in these plant additions when fully equipped will amount to $200,000.00

Financial Notes of The Industry

More Capital for Goodrich, McLean, Firestone, Cincinnati and Carlisle—Keystone Profits—Akron Quotations—Mason Shows Good Profits—Mohawk Quarterly Dividend

Goodrich Increases Capital

(*Special Akron Correspondence*)

At a special meeting of the B. F. Goodrich Company, Akron, Ohio, stockholders held June 26, authorized capital stock of the company was increased $25,000,000, from $84,600,000 to $109,600,000.

The additional $25,000,000 will consist of 7 per cent cumulative preferred stock of the same characteristics as the present issue of outstanding preferred stock. Fifteen million of this stock will be immediately offered pro-rata to the holders of the preferred and common stock of the company of record July 1, 1919, each share of preferred or common stock entitling the holders to .1773 of a share of the additional stock at the rate of $102 per share plus accrued dividends.

The additional stock will carry the regular preferred dividends at the rate of 7 per cent from July 1, 1919.

Payments for new stock must be made on or before August 1, at the Bankers Trust Company, 16 Wall street, New York City.

Suitable warrant will be sent to stockholders as soon as possible after July 1.

McLean Increases Stock

The McLean Tire & Rubber Company, East Liverpool, Ohio, has authorized an 8 per cent preferred stock issue amounting to $200,000 to provide additional working capital, for the construction of new buildings and the purchase of additional machinery and equipment. The officers of the company are: J. C. McLean, president; W. B. Davis, secretary and treasurer; G. H. Stewart, assistant secretary, and H. A. Middleton, superintendent.

Keystone Shows Good Profits

Sales to the amount of $1,124,964 are reported on the profit and loss statement of the Keystone Tire and Rubber Company, New York, as of March 1, 1919. The cost of sales amounted to $954,558, the gross profit was $170,406; miscellaneous incomes $1,278; total $171,684; expenses (administrative, selling and other), $50,517, and the net profit is listed at $121,167. On the balance sheet of the same date, which is subject, as is the profit and loss statement to adjustment at the end of the fiscal year, appears such items as cash in banks and on hand, $298,154; accounts receivable $1,213,321; inventory at cost or less, $675,287, investments in subsidiary companies $132,680, furniture and fixtures, $16,548, and contracts for factory output (amortized annually) $203,244. The total of the complete list amounts to $4,104,714. On the liability side are listed, notes payable $1,351,904; accounts payable, $37,064; preferred stock called for redemption but not presented, $1,100; common stock, $1,723,735, and surplus December 31, 1918, $515,308.

Carlisle Pays Initial Dividend

An initial dividend of two per cent on its preferred stock has been issued by the Carlisle Cord Tire Company, Inc., of New York, checks having been mailed to the company's stockholders on June 30. The concern's capitalization consists of $1,000,000 of preferred stock and 25,000 shares common of no par value.

Cincinnati Rubber Increases Capital

Stockholders of the Cincinnati Rubber Manufacturing Company, Cincinnati, Ohio, have approved the proposed increase of the company's capital stock from $250,000 to $750,000 to take care of expanding business, purchase additional equipment and add new buildings.

The new stock is to consist of $250,000 common and $250,000 7 per cent preferred. The manner for marketing it has not yet been arranged.

Other action taken by the stockholders was the election of officers. One change was made in the directorate, A. W. Schell being made a new member. Other directors reelected: S. D. Baldwin, president; F. D. Scherl, vice-president, secretary and treasurer; James A. Green, Fred A. Geier, Samuel C. Hilles and George M. Verity.

New Firestone Stock

(*Special Akron Correspondence*)

The Cleveland Trust Company, Cleveland, Ohio, as syndicate managers, has announced an issue of $1,500,000 6 per cent cumulative preferred stock of the Firestone Tire & Rubber Co. There is $10,000,000 of preferred stock authorized and when this issue is placed, the entire $10,000,000 will be outstanding. The stock is being offered at par and is to supply additional working capital.

The company's sales, according to the circular, have increased annually since the business was founded in 1900 and in the past fiscal year exceeded $75,000,000.

The total net assets of the company are over $500 for each share of the total amount of preferred stock, while the net quick assets are in excess of $280 a share. Total net earnings for 1918 after deduction for federal taxes were in excess of ten times the preferred stock dividend requirements.

An interesting fact, concerning the Firestone Co. is that of the 14,000 employes 65 per cent are American citizens and that 90 per cent of the employes are holders of common stock. The amount of Liberty bonds held by employes of the company averages $80 a person.

Fisk to Redeem Stock

The Fisk Rubber Company, Chicopee Falls, Mass., has voted to redeem all its outstanding first preferred stock and all first preferred convertible on August 1, 1919. Holders of stock have been notified to present their certificates for redemption at the office of the New England Trust Company, Boston, on that date. The first preferred stock will be redeemed at the rate of $120 a share and the first preferred convertible at the rate of $110 a share. No dividends will accrue on either stock after August 1. The retirement of this stock was made possible by the sale of two new issues of stock; one issue of first preferred seven per cent stock amounting to $15,000,000 and an issue of second preferred seven per cent stock amounting to $2,500,000.

Mohawk Declares Dividend

(*Special Akron Correspondence*)

The Mohawk Rubber Company, Akron, Ohio, directors have declared a quarterly cash dividend of 2½ per cent and a stock dividend of 10 per cent, payable July 1.

Rubber Stocks in Akron

(*Special Akron Correspondence*)

Akron rubber stocks remind one of food—the price is always going up. There is hardly a local stock which didn't increase during the past week when the peace news became definite. Firestone common is over the 160 mark. Goodrich common has hit 325 and so on down the list. Prospects of capacity business for months to come keep the prices climbing.

Following are the quotations for July 7:

	Bid	Asked
Amer. R. & T., com.	55	60
do, pfd.	102½	...
Amazon Rubber	140	150
Firestone, com.	160	162
*do, pfd.	99¾	101
General, com.	425	...
do, pfd.	100	101
Goodrich, com.	80	83
do, pfd.	104	106
Goodyear, com.	323	325
do, 1st pfd.	105¾	106¼
do, 2d pfd.	107¾	108¼
India Rubber	215	...
Kelly Springfield	127	129
Mason, com.	24½	...
do, pfd.	87	...
Marathon, com.	...	55
*Miller, com.	204	208
do, 1st pfd.	103½	104½
do, 2d pfd.	105	106
do, pfd.	100	110
Portage, com.	149	151
Mohawk, com.	301½	...
do, pfd.	97	99
Republic, com.	6¾	7¼
do, 1st pfd.	94	97
do, 2d pfd.	94½	96
Rubber Products	143	146
Star Rub., com.	300	350
do, pfd.	...	99
Swinehart, com.	...	87
do, pfd.	88	92

* Ex. Dividend.

India Tire & Rubber

The India Tire & Rubber Company, Akron, Ohio, manufacturers of cord and fabric tires, has just declared a dividend for the first quarter of its fiscal year on its common stock, payable July 1st, at the rate of 8% annually. The money has also been set aside for the payment of a 7% dividend on July 1st on the preferred stock.

For the comparatively short time the India Tire & Rubber Company has been building hand-made tires, "India" tires have gained an enviable reputation in the sections of the country where they have distribution. It is understood that production is being materially increased so that a country-wide distribution can be taken care of.

Mason Shows Fine Results

Sales of the Mason Tire & Rubber Company, Kent, Ohio, for February were $350,576.71, while the net profits for the month were $38,663.79, after deductions for reserves, depreciation, etc. Sales for February of last year were $96,285.10, which indicates an increase of approximately 300 per cent. Preferred dividend requirements amount to less than $8,000 per month, leaving $30,000 for February for the Common stock, of which there is $850,000 outstanding.

Carlisle Increases Capital

Larger scope for operations of the Carlisle Cord Tire Co., Inc., of New York, will be afforded by substantial increase in its capital effected May 3. By the new arrangement the preferred stock will be increased from $500,000 to $1,000,000, while the common will be increased from $10,000 to $25,000. The increased funds, of course, will provide for expansion in connection with the acquisition of the new home of the Company at Stamford, Conn., where its second and principal plant is being built.

Rubber Men Gather f

Three hundred or more members of the rubber industry gathered at the Sea View Golf Club, Absecon, near Atlantic City, N. J., Tuesday, June 24, for a day's sport and recreation at the first summer outing that has been held by the Rubber Association of America since 1916. Business and its troubles were forgotten, competitors joined in teams, and goodfellowship reigned over all. The weather was ideal, the sea breeze happily tempering the heat of sun that gleamed through an almost cloudless sky.

Probably no more ideal place for a summer outing could have been chosen than the Sea View Golf Club with its beautiful location, golf links, tennis courts, ball field and shooting ground, all dominated by an imposing and well appointed clubhouse.

A number of those who attended the outing came the day before, some to attend a meeting of the Pneumatic Tire Manufacturers' Division of the Rubber Association, which was held at the Chalfonte in Atlantic City on Monday; others merely for convenience sake. The rest came by special train.

After a cold luncheon, which apparently was well enjoyed by all, the company separated into groups to participate in the sports and recreations in which they were most interested. Golf, trap shooting, tennis, base-ball, the swimming pool and a passenger carrying airplane all received their share of attention.

An Airplane Arrives

The airplane, a Curtiss, was the surprise of the day. It came unheralded, hovered over the golf links for a few minntes, and then gracefully landed on the field and "taxied" up to the entrance of the club-house.

When those in the airplane had removed their flying togs and made themselves known, it was discovered that H. H. Durr, president of the Victor Rubber Company, Springfield, Ohio, had chosen this most modern means of speedy locomotion to reach the scene of the outing. Enthusiastic cheers hailed him as the first to come to a Rubber Association outing by the road of the air.

Before the enthusiasm had subsided, announcement was made by an imposing representative of the owners of the airplane that passengers would be welcome for short flights over the neighborhood and any stunt flying they might wish for.

First to respond to this novel invitation was Edward L. Bullock, president of Katzenbach & Bullock Company, the well-known dealers in antimony and other chemical and compounding ingredients, and before many minutes had elapsed Mr. Bullock had donned a flyer's suit and was far up in the air "zooming," "banking," side-slipping about to his heart's content.

Captain Sweet, who was piloting the airplane, landed with Mr. Bullock safely and in perfect style, and soon there was a waiting list of rubber men desirous of joy-riding through the space.

Those who followed Mr. Bullock in "looping the loop" and enjoying other flying stunts were: Bert Manchester, of Meyer & Brown, crude rubber importers and dealers, New York City; Victor Fink, of the Rubber Importers & Dealers Company, New York City; W. H. Dickerson, of Meyer & Brown; A. S. Cadwalader, dealer in mill supplies, Trenton, N. J.; A. S. Delaney, of T. A. Desmond & Company, New York City; J. E. Myers, of the Acme Rubber Manufacturing Company, Trenton, N. J.; R. W. Patrick, and R. G. Granger, both

Photos by Falk Photo Co.

Sport and Recreation

of New York City; E. Schulthees, of the Gutta Percha & Rubber Manufacturing Company, New York City; J. A. Sweet, of W. R. Grace & Company, importers of crude rubber and general merchandise, New York City, and D. L. Meyer, New York City.

All those who had the good luck of being able to enjoy these flights were unanimous in praising the pleasure of flying, and not the least pleased were Captain Sweet and his aids who reaped handsome returns from the diversion.

It was late in the afternoon when the sporting events drew to a conclusion and the various groups returned to the club-house to enjoy the showers, the swimming pool, and also the bar, for on June 24 the Nation had not yet entered the dry period it is now experiencing.

Before dinner, the company was routed out of the club-house and a number of group photographs were taken by the official photographers.

A banquet was served on the piazza of the club-house. All ceremony was done away with, gaiety was universal, and appetites, made keen by the stimulating ocean air and the physical exertion of the day, did full honor to all courses that were set before them. There were no speeches, the only formality being the award of prizes by Francis R. Henderson, chairman of the Outing Committee.

The Prizes

The prizes, comprising silver cups, table sets, humidors, and fine revolver, were distributed to the successful winners as follows:

GOLF

First prize, low gross: Horace Cook, Trenton, N. J.
Second prize, low gross; John W. Herron, Akron, Ohio.
First prize, low net: E. H. Sprague, Omaha, Neb.
Second prize, low net: Walter Bass, Akron, Ohio.

The Inter-City contest for the Trophy Cup, presented by the Trenton Rubber Manufacturers' Association, which must be won three times to become the permanent property of the territorial division, was won this year by Akron, with a score of 314; New York City scoring 319, Trenton, 320, and Boston, 322. This trophy has so far been won successively by Trenton, New York and now by Akron. Mr. Henderson expressed the hope that Boston would take its turn in winning it at the next outing.

TENNIS

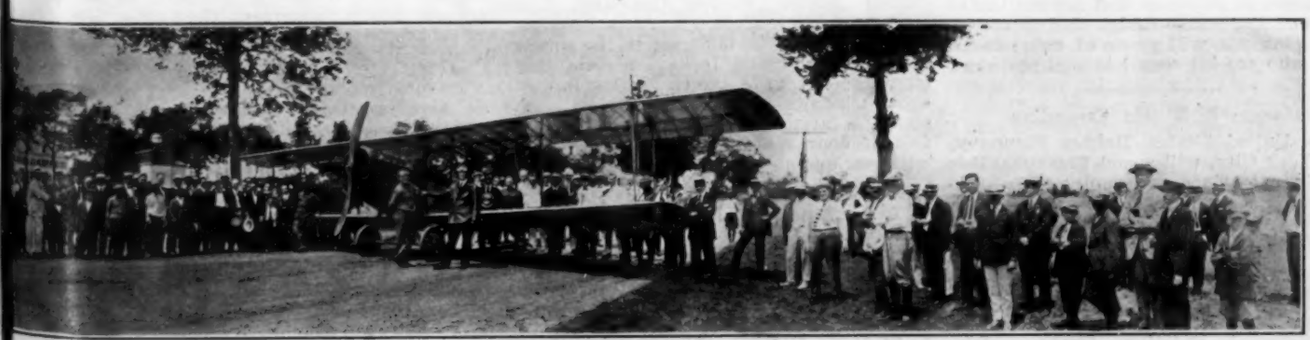
Singles:—S. H. Johnson won the first prize, while the second went to T. R. Shepard, both of New York City.

Doubles:—The winning team of doubles was composed of David Kubie and Roger Hardy, both of New York City.

BASEBALL

The baseball game was between a picked team of the Rubber Industries Athletic League, and a nine chosen from among rubber importers and other men conected with the rubber industry. Five innings were played, brilliant stunts taking place here and there in spite of the burning sun. P. C. Botzenmayer was in charge.

The umpire, Jack Klinow, formerly with the New York "Yankees," judged with the utmost fairness, and to the satisfaction of both sides. The score was: Industries, 6; Importers, 3.



General News of Rubber Trade

New Concern in Mechanical Line—New Quarters for U. S. Rubber in Providence—Firestone Makes Wheel Public Property—Rubber Plantation Movies to Be Made—Other Items of Interest

Mayflower in Mechanical Field

News of interest to the Mechanical Rubber and Druggist Sundry Trade came to light this week when the Mayflower Rubber Works Company, South Braintree, Mass., announced the appointment of George E. Jeandheur as its General Manager and Richard K. Fields as secretary.

The acquisition of these men marks another step forward in the purpose of the company to effect an organization which should make it one of the leaders in its several lines.

Mr. Jeandheur brings to the company a wealth of experience derived from twenty-one years of association with the New Jersey Car Spring & Rubber Company, Jersey City, N. J. He entered the latter company in 1898 and by persistent and intelligent efforts acquired, under the leadership of John J. Fields, a knowledge of the mechanical rubber business which fits him for his new responsibility. He left the New Jersey Car Spring & Rubber Company after Mr. Fields relinquished his interest in that organization and with Richard K. Fields, the son of the latter, accepted a connection with the Mayflower Rubber Works Company, a concern that has made rapid strides during the past two years and is steadily forging ahead in the manufacturing of molded goods and druggist sundries.

A. D. Lamont, well known to the trade and for many years superintendent of the Davol Rubber Comany, Providence, R. I., was recently appointed factory superintendent and is in active charge of manufacturing. The company is planning to enter into a new field shortly and will make an announcement in the near future.

Powdered Fuel System

Some confusion has resulted as a consequence of conflicting statements published during recent months regarding the use of powdered coal and other fuels. A question of doubt has been raised in the minds of many prospective users as to the real economies obtainable, and the safety and mechanical efficiency of handling and controlling powdered coal.

To clear up the situation the Quigley Furnace Specialties Company, 26 Cortlandt Street, New York City, has issued a bulletin describing the equipment employed in the Quigley system for preparing, distributing and burning powdered fuels. It describes a method that has been in successful operation for many months on a variety of furnaces and was developed as a result of twenty years of practical experience in selection and application of fuels and in furnace design and operation.

This bulletin will prove of value to all those who are interested in fuel problems.

Morgan & Wright Expanding

The United States Rubber Company, New York City, will spend $3,000,000 this year in extensions and equipment at the Morgan & Wright plant, Detroit, Mich., a subsidiary company, according to a report from the automobile metropolis.

Master Tire & Rubber

The Master Tire & Rubber Company, 706 Schwind Building, Dayton, Ohio, plans to build a $100,000 factory for the manufacture of tires.

Rubber in Philippines

(Special Akron Correspondence)

James J. Rafferty, director of the bureau of commerce and industry of Manila, was in Cleveland recently to confer with Akron and other Ohio rubber manufacturers with a view to inducing these concerns to acquire and operate rubber plantations in the Philippines.

Mr. Rafferty has represented the United States bureau of peninsular affairs in Cuba and the Orient for more than twenty years.

"The Philippines sent $160,000,000 worth of crude rubber to the United States in 1916," he said. "No rubber plantations are cultivated under the American flag. I believe the time has come for American rubber manufacturing plant owners to take an interest in establishing and developing plantations in the Dutch East Indies, Burmah, Ceylon and Borneo. The percentage of profit ranges above 100 per cent.

"The United States Rubber Co. operates a plantation on the island of Sumatra and has done so for a decade, but this is the extent of American owned plantations.

"I am also trying to interest American capitalists in sugar and fiber fields in the Philippines."

Firestone Releases Wheel Idea

Through the Firestone Steel Products Company, Akron, Ohio, has been released for trade use a new wheel design which renders possible the one man operation of giant pneumatic truck tires. While developed by the Firestone interests for use in connection with the Firestone Type "C" rim, the idea is offered to all wheel builders for their use without royalties or restrictions. The application consists of substituting a lateral slot for the usual hole in the felloe which receives the tire stem. By the use of the slot, which is placed at the bottom of the wheel while the replacement is being made, it is possible merely to slip the rim into place without lifting it over the wheel, as otherwise would be necessary. When the rim has been bolted in place in the usual way by means of the wedge ring and clamps the slot can be covered with a small clip to close the opening around the stem, if the wheel be of metal. With wood wheels the clip is not required.

U. S. Rubber Removes Providence Branch

The Providence, R. I., branch of the United States Rubber Company, 1790 Broadway, New York City, has been removed from 18 Snow Street to the corner of Westminster and Jackson Streets, that city, where it will have two of the largest show windows in the city, one on each street; a large basement, and 5,000 square feet of floor space. Howard E. Crocker will continue as manager of the branch.

Hewitt Rubber on the Coast

The Hewitt Rubber Co., of California, has been incorporated at San Francisco as a subsidiary of the Hewitt Rubber Co., Buffalo, N. Y. The coast company will handle the business for the coast, Hawaii, Philippines and other transpacific countries. Charles W. Harris will be in charge of the local offices.

To Take Films on Plantations

A motion picture chronicle of the growing, collecting and preparation of crude rubber on the Island of Sumatra will be the object of an expedition starting soon under Harry Lever, manager of the Industrial Department of the Universal Film Manufacturing Company, under the auspices of one of the largest rubber product manufacturers in the world.

The tour will embrace all the details of the growing and harvesting of rubber which are so little understood in America today. All territory on the island, where the finest grades of raw stock are grown, will be visited by the cameraman, so that when completed this series of pictures will stand as the first and only visualized and comprehensive survey of this end of the rubber industry in existence.

The cameraman will be called upon to explore many strange and dangerous territories during the taking of the pictures. He will be accompanied only by natives, who will pack his outfit. He will sail to the port of Singapore, where he will make his headquarters.

His outfit is perhaps the most interesting feature of the trip. It will consist of a complete motion picture standard camera, thousands of feet of raw film, and a complete miniature laboratory, by means of which the cameraman will develop his own negative and prepare it for shipment to New York. This is a step which has never before been undertaken in the histories of the film and rubber industries, and its success will doubtless prove of great interest to these great branches.

The film, when completed, will be given a nationwide distribution as an educational feature. It will, of course, primarily be of interest to those actively engaged in the rubber industry. It is confidently expected, however, that the adventures and dangers encountered in the Sumatran jungle will so augment the scenes taken that the series will prove of exceptional interest to photoplay-goers at large. It is certain that, while many film producers have released subjects dealing with the activities of natives in the cradle of the rubber industry, none of these have been keyed to the pitch of interest and reality that will feature the pictures taken on this expedition.

D. & M. Tire to Build

Construction will start immediately on the D. & M. Cord Tire Company, Cleveland, Ohio, rubber plant in Warren, Ohio, according to a report from the latter city. It is further stated that this plant will cost $2,500,000.

The D. & M. Cord Tire Company was recently organized with Walter D. Myers, attorney and banker, Cleveland, Ohio, as president, and Walter R. Denman, secretary and general manager. Cord tires, inner tubes and accessories will be manufactured.

Goodyear Opens Spanish Branch

The Goodyear Tire & Rubber Company, Akron, Ohio, has opened a branch at Madrid, Spain, under the management of Edward M. Sonntag, who has had wide experience in Latin America selling Goodyear products.

Brunswick Opens Kansas Branch

The Brunswick-Balke-Collender Company, Chicago, Ill., has opened a branch in Wichita, Kas., for the distribution of its "Brunswick" cord and fabric tires, also for its solid rubber truck tires.

TIRE NEWS

Big Era of Expansion Faces Auto and Tire Trade

By W. O. Rutherford
Of the B. F. Goodrich Company

"The War Industries Board was the most powerful body of men ever organized in any country in any time in the world's history," Mr. Rutherford said. "But for the efforts of this great body of American business men, Congress would have classed automobiles with pianos and other luxuries, causing the transition of the motor car industry from a war to a peace basis to become a slow and expensive process. Thanks to the heroic work of our big business men, the industry is in a sound, healthy condition and ready to commence diminishing the enormous shortage of passenger cars, trucks, tires and accessories that exists today."

Mr. Rutherford declared that a bright new era of solidarity and expansion was facing the tire dealer and he emphasized the fact that the relationship between the manufacturer, dealer and consumer would be closer and more intimate than ever before. Tire manufacturers, he said, would continue the war-time policy of conservation and standardization of tire sizes, reducing the number of tire types and sizes, and helping to place the tire industry on a sounder and more sensible basis than ever before. Although the standardization policy, said the speaker, would cost the manufacturers several millions of dollars, it would be carried out gladly for the general welfare of the industry.

Tremendous importance was placed by Mr. Rutherford on the good roads movement, and he declared that as a result of the better highways progress inaugurated during the war, the development of good roads during the next twenty-five years will contribute more to the progress and prosperity of America than did the railroads during a like period in their early days.

Intense optimism was the keynotte of the Convention and there was a unanimous feeling that the automobile industry is facing a remarkable period of readjustment and reconstruction.

In the course of his address Mr. Rutherford divided the new problems of the garage man into six parts, as follows:

1. You must define and organize your service to your community. During the war, you have made wonderful gains and adopted improved policies. These must be preserved and any close relationship that will increase the Bigness and Cleanliness of your merchandising methods must be adopted.

2. During the next few months sixteen million war workers must return to peace industries. Your problem is to replace the stars in your service flag with men whose service to the automobile industry will be as efficient and loyal as it was for Uncle Sam.

3. You must distinguish between your problem and the manufacturer's. He must improve the product—you must improve not only your selling methods, but the service you render.

4. You must strengthen the standing of your business with the financial interests of your community. Your business must no longer be loked upon as a "one night stand" affair. Its permanency must be established.

W. O. Rutherford

5. The new and small dealer is a problem you must face. It is your responsibility to see that he starts with "the right foot forward" and practices only clean, constructive business methods. In fairness to yourself, you should teach him the fallacy of price-cutting and discount giving.

6. You have a problem that centers in the public you serve. There must exist a spirit of co-operation among you that will inspire the confidence of the community you serve. Your customers must be made to realize that your business is of one type—four square.

One of the little sentiments connectetd with your gathering here today is reflected in the fact that this conference was conceived in war times; now it is a conference in peace times.

We have had during the past year or two, a lesson of patriotism which we shall not soon forget, but I sometimes feel that the patriotism with which we have carried on the war is small compared with what we may still be called upon to do in this country. Abroad we see the red flag of anarchy waving in the streets of some of the most imperial cities of the world. The red flag does not represent law and order. It stands for selfish individualism. It means the breaking down of our civic and industrial institutions and the very forces which we have so carefully nurtured during the past hundred years. It spreads like a pestilence.

Our boys have gone overseas and thousands of them have laid down their lives because the stars and stripes stood for something. There is no room in this country for any other flag. So today let us pledge anew our allegiance to the greatest of all organizations on earth, the United States of America, and let us as American citizens do something bigger than we have ever done before for the communities in which we live and for the nation that sustains us.

Germany Needs Rubber and Tires

Germany is badly in need of crude rubber and all varieties of manufactured rubber goods, according to word reaching the American market from Europe, and a heavy export demand from this source is anticipated at any time within the next few months, now that the state of war between Germany and the Allies has been officially ended by the signing of the treaty of peace at Versailles last week. Domestic manufacturers believe that the bulk of the German trade will come to this country, as other European countries are in no position to start up any export trade and will not be so for some time.

Well informed men in the domestic rubber trade believe, that although the needs of the Germans for both crude and finished rubber will be enormous, American supplies of crude rubber will not be greatly curtailed by the opening of the German market to world trade once more.

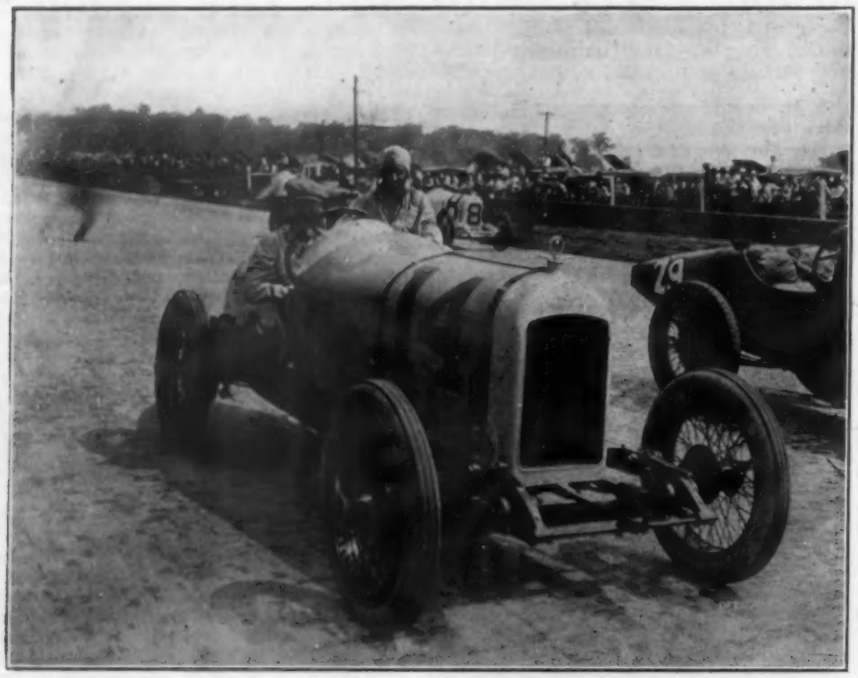
Increased production of rubber during the past year will take care of all demands this year, in the belief of Preston E. Roberts, president and general manager of the Perfection Tire and Rubber Company. "Expected demand for crude material from Germany and Austria with the signing of peace" declared Mr. Roberts in a recent statement, "has been more than offset by increased production during the last year. Large quantities of rubber are known to be held in England and The Netherlands awaiting shipment into Germany when conditions permit. Normally, Germany and Austria use around 30,000 tons of crude rubber a year. Russia is a market for from 5,000 to 10,000 tons annually, but is not expected to be in a position to use much of this material for some time to come. It is estimated that the world's production of rubber this year will amount to 273,000 tons, as against 242,000 tons in 1918. This development of crude, will be sufficient in itself to supply the normal wants of what five years ago were the Central Powers."

Tire Performance in Auto Races

All Records of Tire Performance Eclipsed—Thirty-eight Per Cent Fewer Changes Than in Previous Indianapolis Race—Show Advancement in Tire Building—Mason and Goodyear and Braender Cords Used

One of the most interesting phases of the recent motordrome races at Indianapolis, Ind., and at Sheepshead Bay, New York City, was the remarkable performance of the tires used by the racers.

Aside from the thrilling story of the racers themselves, now that the smoke has cleared away, there stands out as one of the astonishing features of the events the record made by the tire equipment. Never in the history of automobile races has there been a more remarkable performance of tires than that given by the equipment used this year at Indianapolis and at Sheepshead Bay.



TIRES IN PERFECT SHAPE AFTER RACE

Indianapolis Performances

At Indianapolis there were 38 per cent fewer changes than in the previous race held in 1915.

Particularly remarkable was the performance of the Mason tries of Tom Alley's Bender Special, which were the only non-skid tires in the race, it having been previously considered impossible for casings with heavy non-skid treads to withstand the terrific centrifugal force that is experienced in tires at the high speeds attained on motordromes. Tom Alley finished in fifth position, and his tires went the whole 500 miles without faltering. After the race the tires were sawed into, and it was found that their condition was perfect, without even an indication of separation or other damage.

The Mason tires used were of standard Mason cord construction except for the breaker strip that was extended to the side walls. The cushion stock used was an antimony compound devised to prevent heat coming from the treads from reaching the carcass.

One of Alley's rear wheels became detached during the race, and a new one was substituted for it together with a new tire. Otherwise the race was completed on the original equipment.

All of the nine other cars that finished in the Indianapolis race wore Goodyear cord tires. Two of these machines, driven by Ira Vail and Denny Hickey, who finished eighth and ninth, respectively, completed the entire 500 miles without a tire change.

At Sheepshead Bay, with but one exception, that of Mulford's car, which was fitted with Braender cords, all the racers wore Goodyear cord tires and made perfect scores.

Retreading Solid Tires

It is reported from Los Angeles, Cal., that the Bell Rubber Company, of that city, has solved the problem of successfully repairing worn out and damaged solid rubber truck tires. Charles Fleming, vice-president of the concern, claims that 45 per cent of the cost of a new tire is saved by his company's process and that the guaranty is the same as on a new tire, the retreaded product often running 20,000 miles.

George T. Bell, president of the concern has been in Akron, Ohio, in connection with the building of a factory with a capacity for turning out 100 reconstructed solids a day.

Auto Trade Growing

Trade reports by the National Automobile Chamber of Commerce, New York City, indicate that automobile manufacturers are fast coming back into production, carload shipments for February being approximately 19,000, a substantial increase over the 12,030 carloads shipped in February last year.

New Buffalo Tire Factory

A modern plant has been erected and equipped in Buffalo, N. Y., with the most approved machinery for manufacturing high grade cord and fabric automobile casings and inner tubes, by the Madison Tire & Rubber Company, recently incorporated at $625,000.

This new concern, which has behind it some of the oldest, most prominent and experienced men in the rubber industry, has a large chemical laboratory, fully equipped with facilities for chemical control of raw materials, manufacturing process and physical testing of the products. In fact, every provision has been made to render effective the determination of the management to place on the market only strictly high-class goods, and to maintain them at a uniformly high standard of quality.

Operation has already begun with a daily production of 250 tires and tubes, and the output will be steadily increased to full capacity of the equipment, approximately 1,000 casings and 1,000 inner tubes per day.

The superintendent, William Meyers, formerly with the Racine Auto Tire Company, manufacturer of "Horseshoe" tires, Racine, Wis., will be ably assisted by competent experts.

The main offices and eastern sales department are located at the corner of 57th Street and Broadway, New York City, and are in charge of Jean Nehmelmann, eastern sales manager, formerly New York representative of the Mohawk Rubber Company, Akron, Ohio.

The control of the new company is held by men connected with the United States Rubber Reclaiming Company, Inc., New York City and Buffalo, N. Y., and with the banking firm of Ladenburg, Thalmann Company, New York City.

Mileage Guarantee Increases

Following in the wake of the recent reduction of prices comes a more or less general increase in mileage guarantee and adjustment basis for tires. The movement was started by The B. F. Goodrich Company and its subsidiary, the Diamond Rubber Company. The increase in mileage ranges anywhere from 30 to as high as 75 per cent of the previous guarantees. A canvass of the tire companies shows that the majority have increased the mileage, three have made no recent change, while some do not give any specific guarantee at all.

Some of the companies which have raised their mileage adjustment basis and the old and new figures are: Firestone, fabrics—3,500 to 6,000, cord—8,000; Fisk, Red Tops—4,000 to 7,000, cords—8,000; General, Jumbo — 7,500, cord — 7,000; Goodrich, fabric—3,500 to 6,000, cord—5,000 to 8,000; Keystone, fabric—4,000 to 6,000; Federal, plain tread—4,000 to 6,000, rugged tread—5,000 to 7,000, cord—6,000 to 8,000; Racine, non-skid fabric—5,000 to 6,000, cord—7,500 to 8,000; Stronghold fabrics, Ford size — 7,500, other sizes—6,000; Diamond, fabric—3,500 to 6,000, cord—5,000 to 8,000.

A few of the larger companies do not give a mileage guarantee or give a definite basis on which adjustments will be made. Rather, they make adjustments of claims on poor material or defective workmanship on the merits of the individual case. They feel this method gives greater satisfaction than setting a fixed scale which is quite frequently not applicable to the particular case. Those companies which have not made any change in their mileage basis point out that they have their present figures high enough.

Tire and Rubber Company News

Two New Directors for Canadian Consolidated—Carlisle Holds Annual Meeting—Bergougnan of France Buys DeLion Plant—New Quabaug Directors—Keystone Adds Two to Board

Canadian Consolidated Elections

At a meeting held on June 5, Sir Charles B. Gordon, K. B. E., and Lieutenant-Colonel Herbert Molson, M. C., were elected to the Board of Directors of the Canadian Consolidated Rubber Company, Limited, Montreal, Canada.

Sir Charles B. Gordon, K. B. E., is prominent in commercial and financial circles in Montreal and Canada. He is Vice-President and Director of the Bank of Montreal, Director of the Royal Trust Company, President of the Dominion Textile Company, and Vice-President of the Montreal Cotton Company and C. Meredith Company. He was Deputy Chairman of the Imperial Muntions Board, and during 1918 he was the representative of the Imperial Munitions Board at Washington, D. C. For many years Sir Charles Gordon has been an active member of the Canadian Manufacturers Association and was Vice-President of the Quebec Branch in 1911.

Lieutenant-Colonel Herbert Molson, M. C., is a member of one of the oldest and most distinguished families in Montreal. He is a Director of the Bank of Montreal and the Royal Trust Company and is President of the Molson Brewery. Lieutenant-Colonel Molson was among the first to offer for overseas service, and after a brilliant military career in France and Flanders, was awarded the Military Cross. He gained his rank while on service in France.

The Board of Directors of the Canadian Consolidated Rubber Company as now constituted comprises Sir Mortimer B. Davis, Sir Charles B. Gordon, K. B. E., Lieutenant-Colonel Herbert Molson, M. C., E. W. Nesbitt, M. P., J. B. Waddell, Victor E. Mitchell, K. C., W. A. Eden, R. E. Jamieson, A. D. Thornton, N. Wellein, Colonel Samuel P. Colt, Charles B. Seger, Homer E. Sawyer, J. Newton Gunn and Elisha S. Williams.

Besaw Stockholders Meet

A special meeting of the stockholders of the Besaw Tire & Rubber Company, Hartville, Ohio, has been called for June 16, at the offices of the company there. At this meeting the stockholders will be asked to vote on the proposed increase in the capital stock of the company from $500,000 to $900,000. At the same time a plan to reduce the present amount of preferred stock from $500,000 to $100,000 will also be presented to the stockholders for action. Other business will include the election of a board of directors to serve out the remainder of the year, the amending of the charter of the company so that its principal offices can be transferred from Hartville to Ardmore, Okla., and to confirm and ratify the sale of the Hartville plant to E. L. Henderson, of Carrollton, Ohio.

Annual Meeting of Carlisle

At the annual meeting of the stockholders of the Carlisle Cord Tire Company, Andover, Mass., held in New York City, on March 21, the following officers were elected for the year 1919: J. S. Bretz, president; C. A. Gilbert, vice-president; Lewis H. Homer, treasurer; F. R. Serles, secretary; C. V. Tuthill, assistant secretary and assistant treasurer.

Bergougnan Acquires Plant

With the six million mark in automobile registration passed and the American market for tires growing every day, European manufacturers are turning from a consideration of their prospects in the countries lately devastated by war to the larger opportunities offered here.

One of the largest—if not the largest—tire concerns in France, the Etablissements Bergougnan of Clermont-Ferrand, has taken the initiative and during the current month has consummated the purchase of a modern fully equipped tire factory in Trenton, N. J., where from now on the Bergougnan tires will be manufactured.

The Bergougnan company has a record that is as old as the automobile tire industry. Before the pneumatic tire's advent it was engaged in the manufacture of rubber stamps and other incidentals, but its real history began in 1889 when tires first made their appearance on the roads of France. From a capitalization of 1,500,000 francs it has grown to a monster organization with branches in every civilized country on the globe.

RAYMOND C. BERGOUGNAN

The founder of the business, Raymond Bergougnan, is one of the most progressive of the "captains of industry" of France. During the war he took in hand the supply of tires for the transport division of the French army and it was in a great measure due to him that communication was kept open between Verdun and the supply depots in the rear. Night and day thousands of army trucks brought ammunition and fresh troops to hard pressed Verdun and more than two-thirds of these trucks were mounted on Bergougnan tires. Mr. Bergougnan is an officer of the Legion of Honor and as active in the management of the Bergougnan "Establishment" as on the first day of its organization.

In addition to the plant in Clermont-Ferrand, which covers 40 acres and employs 8,000 workmen, the Bergougnan company operates factories in Moscow, Russia, and Turin, Italy. The new Trenton factory is equipped to turn out six hundred tires a day but extensive additions are planned in order to permit the manufacture of solid tires in which line the Bergougnan firm enjoys undisputed supremacy in Europe.

Some idea of the importance of the concern, and of the solicitude which it feels for the welfare of its employees, may be gathered from the fact that throughout the war it carried on the pay roll at half pay more than 800 of its men serving at the front, and contributed 2,407,075 francs to the relief of their dependents and in various charities and welfare work. A vigorous advertising campaign is being planned.

Quabaug Rubber Changes

The Quabaug Rubber Company, North Brookfield, Mass., recently made several changes in the personnel of its organization. The officers elected are as follows: Thomas G. Richards, president and sales manager; C. A. Evans, Merchants National Bank, Worcester, Mass., treasurer. The directors, in addition to the foregoing, are: Henry Drew, National Union Bank, Boston, Mass.; Frank A. Drury, Merchants National Bank, Worcester, Mass.; Frank Smith, attorney, Worcester, Mass.; Walter T. Bucklin, Liberty Mutual Insurance Company, Boston, Mass., and William Edmunds, who represents Boston investments. Charles Burgess has resigned from his position as director, treasurer and sales manager of the company, as have also Eugene de Rozier, chief chemist, and F. W. Tingley, engineer.

Keystone Adds Two Directors

Announcement is made that Benjamin Lissberger of B. Lissberger & Company and the Eagle Smelting and Refining Works, Woolworth Building, New York City, and Walter Loewenthal, the present Secretary of the Keystone Tire & Rubber Company, have been elected directors of the company. This addition now makes the total directorate of the Keystone Tire & Rubber Company seven.

The other five directors are: L. W. Lissberger, President of the Keystone Company; Joel L. Jacobs, Treasurer of the Keystone Company; N. J. Miller, Miller & Co., Bankers, 120 B'way, New York City; Julius Lichtenstein, President of the American Sumatra Tobacco Co.; Sydney Bernheim, Vice-President of the Keystone Company.

A. W. Faber American Owned

A. W. Faber, Newark, N. J., announce that, by an act of Congress, the concern has passed to the ownership of American interests, and will henceforth be known as A. W. Faber, Inc.

Harry Fera, Jr., will continue as general manager, and the same business organization will be retained, together with the well known line of rubber bands and erasers.

Archer Elects Officers

The Archer Tire & Rubber Company, Minneapolis, Minn., at a recent meeting elected the following officers: W. F. Bigelow, president; William A. Beiter, vice-president; and M. A. Hessian, secretary and treasurer.

Johnstone Tire Elections

The Johnstone Tire & Rubber Company, Peoples Gas Building, Chicago, Ill., has elected the following officers: E. C. Walton, president; B. R. Blackwelder, vice-president; C. W. Mussey, secretary and treasurer, and A. P. Eaves, engineer.

American Rubber Patents

ISSUED JUNE 17, 1919.

1,306,681—To Leo H. Baekeland, Yonkers, N. Y., assignor to General Bakelite Company, New York, N. Y. Phenolic condensation product and process of making same.

1,306,697—To James W. Ivory, Philadelphia, Pa. Napkin or roll attachment for rubber-dam clamps.

1,306,724—To Alfred T. Schyllander, Toledo, Ohio, assignor of one-half to Charles E. Adamson, Toledo, Ohio. Tire.

1,306,730—To Dick Willis and Edward H. Martens, Westside, Iowa. Traction and anti-skid device for truck tires.

1,306,769—To Henry L. Ochs, Kansas City, Mo. Vehicle tire

1,306,814—To Joseph Rudolph Holcombe, New York, N. Y. Tire mounting and clamp therefor.

1,307,131—To Martin Kimbel, Auckland, New Zealand. Tire adjuster.

1,307,164—To Frank B. Turner, Ocala, Fla., assignor of one-half to Louis W. Duval, Ocala, Fla. Resilient wheel tire and adjustable rim.

1,307,181—To Leo A. Bixby, Kalamazoo, Mich. Wheel and tire carrier

1,307,190—To Forrest B. Dunlap, Tulsa, Okla., assignor of one-half to Earle C. Stricker, Tulsa, Okla. Tire repairing device.

1,307,192—To Robert Fagan, Meacham, Ore. Traction device.

1,307,195—To Joseph F. Gardner, Kansas City, Mo. Pneumatic fountain pen.

1,307,212—To Michael Philipp, Wausau, Wis., assignor to National Auto Wheels Corporation, Wausau, Wis. Resilient wheel.

1,307,208—To William Edgar Muntz, London, England. Tire for vehicles.

assignor to Rudge-Whitworth, Limited, Coventry, England. Vehicle wheel.

1,307,630—William A. Haskins, West Somerville, Mass. Fountain pen.

1,307,730—Max Freedman, Brookline, Mass. Tire

1,307,731—Charles C. Gates, Denver, Colo., assignor by mesne assignments to the Gates Rubber Company, Denver, Colo. Automobile fan belt.

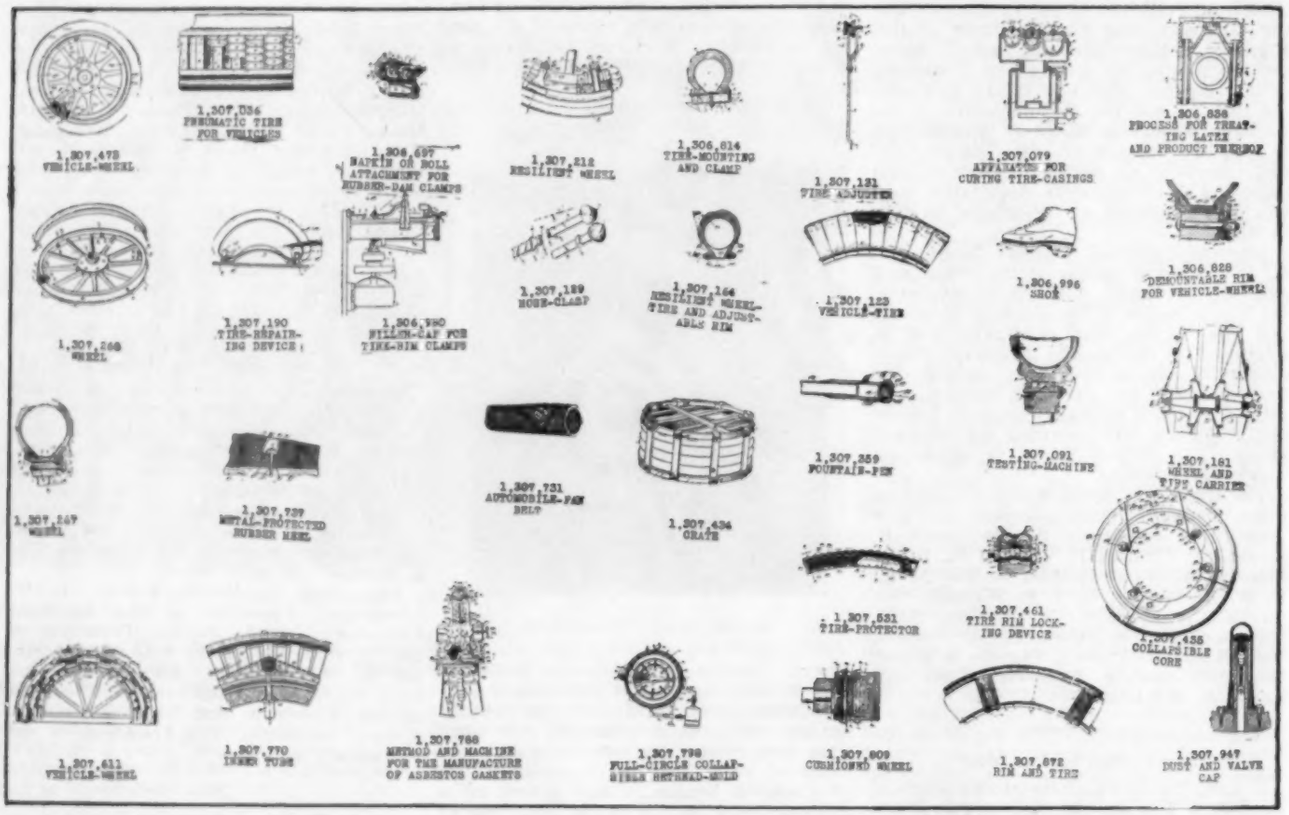
1,307,737—William R. Hilderbrand, Chicago, Ill. Metal protected rubber heel.

1,307,769—Frank E. Bessler, Akron, Ohio. Inner tube.

1,307,770—Frank E. Bessler, Akron, Ohio. Inner tube.

1,307,782—Abraham Lawres, Brooklyn, N. Y. Trench fountain pen.

1,307,788—Edward Nall, Akron, Ohio; Edith A. Nall, executrix of said Edward Nall, deceased, assignor to the Goodyear Tire & Rubber Company, Akron, Ohio. Method and machine for the manufacture of asbestos gaskets.



1,306,828—To Stewart R. McKay, Cleveland, Ohio, assignor to The McKay Company, Cleveland, Ohio. Demountable rim for vehicle wheels.

1,306,838—To Edward Mark Slocum, Medan, Sumatra, Dutch East Indies, assignor to General Rubber Company. Process for treating Latex and product thereof.

1,306,954—To John N. Foster, El Paso, Tex., assignor of one-sixth to Henry Becker and one-sixth to Otto Nordwald, El Paso, Tex. Demountable rim.

1,306,980—To John Bell Stroud, Pass Christian, Miss. Filler cap for tire rim clamps.

1,306,996—To Perley H. Brown, Hudson, Mass., assignor to Apsley Rubber Company, Hudson, Mass. Shoe.

1,307,036—To Hans Bretscher, New York, N. Y., assignor of thirty-five one-hundredths to Felix Spitzner, New York, N. Y. Pneumatic tire for vehicles.

1,307,037—To Edgar H. Bristol, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass. Thermometer.

1,307,039—To Herman Casler, Canastota, N. Y. Tire pump.

1,307,055—To William H. Krug, Oshkosh, Wis. Coupling for anti-skid attachments.

1,307,079—To Philip P. Bongi and Elonzo Stephenson, Fort Worth, Tex. Apparatus for curing tire casings.

1,307,091—To Louis E. Foster, Annapolis, Md., assignor to Tinius Olsen Testing Machine Company, Philadelphia, Pa. Testing machine.

1,307,123—To Stephen D. Hartog, St. Louis, Mo. Vehicle tire.

1,307,129—To Ehsan Karadaghli, Chatham, N. J. Hose clasp.

1,307,245—To Fairleigh S. Dickinson, Rutherford, N. J. Valveless syringe.

1,307,267—To Louis H. Periman, New York, N. Y. Wheel.

1,307,268—To Louis H. Periman, New York, N. Y. Wheel

ISSUED JUNE 24, 1919.

1,307,359—To Edward Hugetz, New York, N. Y. Fountain pen.

1,307,371—Frederick H. Oehlke, deceased, Ridgeville, Ohio. Laura Augusta Pease, executrix, Ridgeville, Ohio, assignor to Bertha M. Oehlke, West Dover, Ohio. Furnace.

1,307,372—Kenneth A. Palmer and John C. Irvin, New York, N. Y. Mold.

1,307,373—Herbert P. Pearson, New York, N. Y., assignor to Pearson Products Corporation, New York, N. Y. Method of waterproofing fabrics.

1,307,434—John R. Buechler, Keokuk, Iowa, assignor to Albert G. Wetmore, Plymouth, Ind. Crate.

1,307,435—Elmer J. Bundy, East Palestine, Ohio, assignor to the McGraw Tire & Rubber Company, East Palestine, Ohio. Collapsible core.

1,307,445—William J. Kelly, Cedar Rapids, Iowa, assignor of one-half to E. L. Barber, Wyoming, Iowa. Tire shoe.

1,307,461—Theron A. Smith, San Jose, Cal. Tire rim locking device.

1,307,473—Erle K. Baker, Chicago, Ill., assignor to Universal Rim Company, Chicago, Ill. Vehicle wheel.

1,307,531—Marvin C. Altmeyer, New York, N. Y. Tire protector.

1,307,611—William Blair, Coventry, England, assignor to Rudge-Whitworth, Limited, Coventry, England. Vehicle wheel.

1,307,630—William A. Haskins, West Somerville, Mass. Fountain pen.

1,307,730—Max Freedman, Brookline, Mass. Tire

1,307,731—Charles C. Gates, Denver, Colo., assignor by mesne assignments to the Gates Rubber Company, Denver, Colo. Automobile fan belt.

1,307,737—William R. Hilderbrand, Chicago, Ill. Metal protected rubber heel.

1,307,769—Frank E. Bessler, Akron, Ohio. Inner tube.

1,307,770—Frank E. Bessler, Akron, Ohio. Inner tube.

1,307,782—Abraham Lawres, Brooklyn, N. Y. Trench fountain pen.

1,307,788—Edward Nall, Akron, Ohio; Edith A. Nall, executrix of said Edward Nall, deceased, assignor to the Goodyear Tire & Rubber Company, Akron, Ohio. Method and machine for the manufacture of asbestos gaskets.

1,307,798—Paul Max Stephan, San Francisco, Cal. Full circle collapsible retread mold.

1,307,800—Jacob J. Wohlgemuth and Ford Lilly, Chicago, Ill., assignors to Lafayette Rubber Company, Chicago, Ill. Resilient tire core.

1,307,806—Glenn A. Brewer, Kansas City, Mo. Aeroplane.

1,307,809—Alfred S. Duffies, Markesan, Wis., and Francis Mead, Chicago, Ill. Cushioned wheel

1,307,869—John A. McKay, Toronto, Ontario, Canada. Electric fitting connection.

1,307,872—William R. Miller, Elizabeth, N. Y. Rim and tire.

1,307,947—Ralph O. Williams, Vicksburg, Mich. Dust and valve cap.

1,307,980—Henry P. Kraft, Ridgewood, N. J. Tire valve.

1,307,990—Edwin D. Stalfort, Baltimore, Md. Cushion heel.

1,308,014—Raymond B. Price, New York, N. Y., assignor to Rubber Regenerating Company. Treatment of vulcanizable materials.

New Incorporations

Cleveland Spring Wheel & Tire Company, Cleveland, Ohio; capital, $50,000; incorporators: Jasper P. Murrey, H. L. Adams, A. F. Jaite.

Perfection Tire & Supply Company, Moline, Ill.; to operate a garage; capital, $10,000; incorporators: Arthur J. White and others.

Lyons Tire Company, Springfield, Ill.; to deal in automobile tires; capital, $5,000; incorporators: P. Henry Stewart and others.

MARKETS

Manufactured Rubber Goods

NEW YORK, July 7, 1919.

Conditions in the rubber trade as a whole run from adverse to favorable. In some branches of the manufacturing industry current demand is good, prospects for further expansion in domestic requirements are roseate, and now that readjustments in Europe are likely to be speedily worked out, developments in the way of enlarged exports are anticipated. Buttressing the expectations of improvement in foreign trade is the announcement that the Belgian railways are to be electrified, and France is to adopt a similar program, while restored Poland is preparing to install power plants in its larger cities.

Money, which at this time last year was held in leash, as it were, for governmental requirements, now is being made available for the inauguration of new enterprises and for the extension of old ones. These industrial entities will eventually use rubber in one form or another. Many of these enterprises still are in the embryonic stage, and in consequence some time will elapse before they will have arrived at the point where rubber will be required.

While looking on the favorable side of the shield, the observer of economic trends, as related to the rubber industry, should not lose sight of the fact that the railroads hold aloof from the buying market, that wages are at record levels, and that help is not abundant in centers where workers could be employed to advantage. In time the railroads will be restored to their original owners, and when this event comes to pass they will again be in the market for mechanical supplies.

Other negative influences are the indifferent demand and low prices for basic materials, crude rubber, scrap and reclaim stock.

MECHANICAL RUBBER GOODS

Trade in marine specialties for ocean going vessels is quite active, some manufacturers have made limited sales of belting to railroad shops, and power transmission belting has been sold on a relatively good scale to copper mining interests. But the railroads, through the Federal Railroad Administration, are said to be doing some inter-trading, although it has been said that the stocks held by the railroads have been whittled down greatly. Textile mill construction, present and prospective, in the United States promises an enlarged outlet for rubber goods.

It is said that foreign inquiries for mechanical rubber goods are increasing, South America, Europe and the West Indies being some of the sources from which these inquiries have emanated. Belgium and northern France are in urgent need of supplies to enable their mining, textile, iron, pottery and other industries to resume operations.

Demand for air, water and steam hose has been stimulated by the increase in building operations in the United States, the curve of which, according to leading architects and engineers, is likely to ascend to record heights now that it has been realized that prices for builders' materials as well as wages will not recede in the near future.

AUTOMOBILE TIRES

Although business is improving it is not abreast of anticipations. Usually trade at this season is brisk, but the "fly in the ointment" is caused by expectations on the part of dealers of another drop in prices. Tire manufacturers counter with the statement that while crude rubber is cheap the high price of cotton duck, with increased wages for workers, offsets any probability of prices being further shaded at this juncture. One of the leading representatives of the tire manufacturing industry recently estimated that by 1920 nearly 14,000,000 tires will be needed for new equipment alone, and that many new tire plants will be required to meet the country's demand for tires.

DRUGGISTS' SUNDRIES

Domestic trade has been held within narrow limits by mid-year inventorying, but export business has enlarged. France, England, Australia, South America, and the West Indies have taken goodly quantities of surgical supplies, while fair sales have been made to South Africa.

MISCELLANEOUS MANUFACTURES

Rubber tiling for floor covering is in light demand, but the new construction work now under way throughout the country is expected to superinduce considerable improvement. Manufacturers of toy balloons, principally for advertising foodstuffs and wearing apparel, are swamped with orders. Garden hose is in brisk demand, and a similar statement applies to fire hose. The municipalities of the country being no longer denied the privilege of floating bonds are again purchasing essential fire equipment. Business in rubber overshoes is affected by the customary seasonal dullness, and improvement is unlikely before the approach of autumn. Tennis shoes are in good demand as are tennis balls and all other sporting goods lines.

Cotton, Yarns and Fabrics

NEW YORK, JULY 7, 1919.

Steady deterioration of the cotton crop has been noted since our last report, and the market has been firmly held in all quarters throughout. The market at present is a weather one, and reports of the Government indicate that the crop is in the worst condition it could possibly be and still survive. Weather reports state that the fields are running over with weeds, with the weather in cotton growing States the coldest for several seasons at this time of the year. Holders are not offering cotton in large volume except when they are in a position to obtain their own prices, as steady foreign demand is expected to keep the market in a strong position for some time to come, yet.

Exports to France and England have slumped to a considerable extent during the past two weeks, the general European buying movement having lost its edge. Reports from Manchester state that no settlement of the strike of cotton workers there has been effected, and in the meantime consumption necessarily slumps off while the mills there remain idle. Germany and Austria are looked upon as potential purchasers of cotton now that the treaty of peace with the former has been signed, and it is expected that Germany will enter the American market for large quantities of the staple as soon as conditions over there have settled down. Some shipments have gone forward on consignment to Rotterdam, there to be trans-shipped into the interior of Germany.

Cotton prices generally hold strong. Demand from the mills is good in view of the fact that continued activity from all divisions of the cotton goods market is reported at high prices.

SEA ISLAND COTTON

Late reports from the South confirm reports of the small planting of Sea Island cotton for the next crop, only about 10 per cent of the usual amount of acreage having been planted to the Sea Island staple this year. Growers have waged a losing fight against the boll weevil pest, and practically all of the small crop planted for next year is expected to be destroyed by the insects, much of the crop having been already destroyed. Manufacturers of fine cotton yarns who have been in the habit of using large quantities of the Sea Island staple are beginning to cast around for a suitable substitute, and are having a difficult time of it. The Sea Island fiber, although it does not possess great strength in itself, is very fine, and permits of a large number of fibers without making too coarse a yarn, resulting in getting a large degree of strength in the finer yarns. It is used largely in making fine thread yarns, tire yarns, and other cotton goods requiring more than ordinary strength. Large quantities of the yarn were used in the manufacture of airplane cloths during the war, the bulk of the crops of the past two years having been used for that purpose. Remaining stocks are very scarce, and generally show very poor quality. Many spinners are experiment-

ing with Peruvian mitafiffi cotton, said to be the nearest approach to both the Sea Island and Egyptian varieties. The Government is developing the new Meade cotton through the Bureau of Plant Industry, and although this cotton bids fair to eventually prove a success, the development has not yet reached a point permitting of quantity production.

EGYPTIAN COTTON

Spinners are also experiencing some difficulty in getting enough Egyptian cotton to cover their requirements, due to the export restrictions in force on Egyptians. The shipping situation is also hampering the free importation of the cotton from Alexandria. American Egyptian cotton, grown in the arid sections of the Southwest and mentioned in these columns some time ago, has been used with some success by spinners. American Egyptian of the Pima valley variety is longer in staple than the Sea Island, and is more uniform in character than the Eastern Coast product. The fibers have proved in tests conducted by the Government to be fully as strong as Sea Island, and the crop may be grown with more safety, being independent of weather conditions, inasmuch as it is large grown on irrigated land. The American Egyptian cotton growers have thus far kept out the boll weevil.

An increase of from 20 to 25 per cent in the acreage of this cotton is reported from Arizona and California, the two States producing this staple exclusively, and while the last year's crop totaled only 35,000 bales, that of this year will be fully 50,000 bales. The normal Sea Island crop is only 80,000 bales.

FABRICS

Demand is steadily on the increase and the market is displaying a firmer tone on all grades of fabrics. Cotton goods manufacturers report that the volume of business in their division of the market is steadily picking up, and the mills are increasing production to take care of all the business offered them. Market prices hold firmly, advancing on many lines.

TIRE FABRICS

A fairly active demand for tire fabrics is reported, and prices continue nominally unchanged on the established basis. Although the demand for tires is not as active as manufacturers would like to see it, many of the tire producers are manufacturing steadily and storing their tires against a heavy demand later on in the year. The reduction in the production of automobiles has largely had the effect of cutting down demand for tires, the auto manufacturing industry having received a severe, although temporary setback during the war, inasmuch as many plants were put on 100 per cent war work, and will have to go through a regular "demobilization" to get back on a working basis.

HOSE AND BELTING FABRICS

A fair consuming demand for hose and belting fabrics is reported, but trading is still considerably below normal. Government requirements still take some quantities of raw materials from the market, but manufacturers are in a position to handle all the civilian business offered them. Manufacturers of hose, belting, and other mechanicals, however, report a quiet market. Some belting is being bought for export, but domestic demand is quiet. The railroads are not buying as in normal times, although large orders are looked for now as supplies are believed to be well used up.

DRILLS, SHEETINGS AND OSNABURGS

A strong market for these fabrics is reported in the local market, and prices are well maintained with an advancing tendency to prices. A good domestic consuming demand has sprung up, and in addition manufacturers are booking many orders for the export trade. Prices continue generally unchanged. The War Department, through its sales organization, is preparing to dispose of 17,000,000 yards of cartridge cloth. Although the cloth, in its present state is a gray gummy material resembling burlap, by being processed it can be used as silk or for any other purposes requiring a heavy warp. Sealed bids to be opened on July 10 will dispose of the lot.

BURLAPS

The market for burlaps has been strongly held during the past two weeks, with a paucity of offerings generally restricting trade. Prices quoted by the different interests in the market vary, but the undertone is strong throughout. Many holders are asking considerable above the market in an effort to shut off demand, thus allowing them to hold the goods to be sold in the higher market which is expected within a short time. Some supplies of Dundee burlap are arriving, but this stock is much less desirable than the Calcutta variety, not being suitable for all purposes, it being made of a darker thread.

TIRE FABRICS

17¼-ounce Sea Island, combed,	sq. yd.	1.40@1.55
17¼-ounce Egyptian, combed		1.20@1.30
17¼-ounce Egyptian, carded		Nominal
17¼-ounce Peelers, carded		.85@ .90
17¼-ounce Peelers, combed		1.05@1.15

DUCKS

Single Filling (pound basis)	lb.	Nominal
Double Filling (pound basis)		Nominal

DRILLS

37-inch 2.35-yard	yd.	@	
37-inch 2.75-yard		.24½	@
37-inch 3.00-yard		.23	@
37-inch 3.25-yard		.21	@
37-inch 3.50-yard		.20	@
37-inch 3.95-yard		.18½	@
37-inch 2.00-yard Southern			@
37-inch 2.00-yard Northern			@
40-inch 2.40-yard Southern			@
40-inch 2.40-yard Northern			@
52-inch 1.90-yard Southern			@
52-inch 1.90-yard Northern			@

SHEETINGS

40-inch 2.35-yard	yd.	.23 @	.23½
40-inch 2.50-yard		2.50	@
40-inch 2.85-yard		.21	@
40-inch 3.00-yard		.20 @	.20½
40-inch 3.25-yard		.19 @	.19½
40-inch 3.75-yard		.17½	@
40-inch 3.60-yard		.18	@
40-inch 4.25-yard		.16	@

Note.—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.

BURLAPS
(Carload lots)

	Per Yard
7 -ounce 40-inch	Nominal
7½-ounce 40-inch	10.50@
7½-ounce 45-inch	Nominal
8 -ounce 36-inch	10.50@
8 -ounce 40-inch	10.65@ 10.75
8½-ounce 40-inch	@
10 -ounce 36-inch	@
10 -ounce 40-inch	11.75@ 11.85
10 -ounce 45-inch	Nominal
10½-ounce 40-inch	12.00@ 12.10

Chemicals and Compounding Materials

NEW YORK, July 7.

The tendency of prices has been generally sharply upwards during the past fortnight, and increased strength is noted in nearly every quarter of the local market for chemicals and compounding materials. Rapid advances in oils have been the feature of the trading again during the past two weeks, and prices are generally higher throughout, with the exception of pure gum spirits of turpentine, which tumbled 12 cents during the period to $1.00 and $1.03 per gallon, after having reached the record high of $1.15. Consumers continue to come into the market for larger quantities of materials, many having discontinued their policy of buying in a hand-to-mouth nature, and are now buying ahead. This is the usual attitude of the buyers on an advancing market.

Producers of lithopone and barytes are experiencing a heavy demand for their products, the volume of business offered in many instances exceeding the supplies available for filling these orders. France, which formerly was an exporter of these materials to the American market, is now placing orders here. June's business showed a good improvement on nearly all lines over that of May. Producers, on the whole, are trying to keep prices from advancing much higher, zinc oxide producers having announced that they would retain their present prices until the end of the year unless some radical change in the market should occur.

BENZOL

Quotations in benzol continue held on the basis of 22 to 27 cents, and no changes in conditions governing the market have been noted. Demand continues fairly active from all quarters of the market, and many holders are holding their stock for a price of 25 cents, producers only being willing to accept the inside figure quoted.

LITHARGE

Improvement in the demand for litharge is noted, with the market steadily held on the basis of 9¾ and 10½ cents per pound for American powdered in casks. Quantity prices continue unchanged. Producers have only small stocks on hand, having held down production during the dull period following the armistice.

LITHOPONE

Strong demand for lithopone has succeeded in cleaning up the large stocks which producers had accumulated a short time ago, and the market is now firmly maintained on the basis of 6½ cents per pound in barrels for carload lots. Some producers are unable to keep up with the demand, being unable to speed up their output, enough to take care of the volume of business offered. Export demand is a feature.

WHITING

Demand for whiting continues unchanged along routine lines. Receipts from Great Britain are not very large, and dealers are unable to accumulate any stocks, the demand taking care of all that comes into their hands. Prices are firmly held on the basis of $1.15 to $1.20 for commercial in carlots.

BARYTES

A strong inquiry for barytes is reaching producers from the export trade at the present time, and the market is firmly held. England is still the chief foreign buyer of the barytes, although inquiries are also coming in from other foreign countries. In the meantime, domestic demand continues to keep pace with the production, the strong position of the lithopone market having created a consistently strong call for the crude barytes. Prices continue unchanged on all varieties.

ZINC OXIDE

Zinc oxide prices remain unchanged, and producers are reported to have announced that they will make no changes during the remainder of the year, unless conditions in the market are radically altered. The automobile industry is reported as particularly active in the market at the present time. Export demand is also on the increase, and heavy shipments are now going forward to France and Great Britain. Domestic inquiry also continues strong.

DRY COLORS

Trading continues generally quiet, with the market steadily held. Quotations for Blacks continue unchanged on the quoted basis, with a fair demand noted. Blues are also steady under a quiet routine call. There is little change in the Brown market and conditions in the market for Greens also continue unaltered. A fairly strong demand for Reds is noted, and the market is showing more strength than on other varieties, with American Indian red selling especially well. There are no developments to report in the market for Yellows.

Prices Current for Chemicals, Fillers, Colors, etc.

Acetone, in drums	lb.	.15½ @	—
Accelerator, in drums	lb.	.85 @	1.00
Acids, Acetic, 56%	cwt.	6.00 @	6.50
Carbolic, C. P.	lb.	.15 @	.18
*Cresylic, C. P.	lb.	1.10 @	1.15
Muriatic, 20 deg.	lb.	1.20 @	1.40
Muriatic, 22 deg.	cwt.	1.40 @	1.60
Nitric, 42 deg.	cwt.	7.00 @	8.00
Nitric, 40 deg.	cwt.	6.75 @	7.50
Sulphuric, 60 deg.	ton	12.00 @	15.00
Tartaric, crystals	lb.	.86½ @	—
Aluminum Flake	ton	29.00 @	31.00
Aniline oil, bulk basis, Contract		.24 @	.—
Imported		Nominal	
Antimony, metal spot	lb.	8.50 @	—
Oxide	lb.	.08½ @	.12
Sulphuret, red	lb.	.20 @	.21
Sulphuret, golden	lb.	.21 @	.22
Sulphuret, crimson	lb.	.35 @	.40
Asbestos	ton	35.00 @	45.00
Asphaltum, Egyptian	lb.	.20 @	.30
Domestic	ton	22.00 @	30.00
Barium sulphate, technical	lb.	.04½ @	.05
Sulphide	lb.	07¼ @	.07½
Barytes, prime white imported	ton	Nominal	
white, domestic	lb.	.30 @	.31
off color, domestic	lb.	.21 @	.24
Southern, f.o.b. mills		21.00 @	—
Western, f.o.b. mills		21.50 @	—
Benzol, pure, bulk	gal.	.22 @	.27
Beta-naphtol, sublimed	lb.	.55 @	.65
unsublimed	lb.	.50 @	.52
Blacks, Drop	lb.	.05½ @	.15
Ivory	lb.	.16 @	.30
Carbon, gas, cases	lb.	.12 @	.25
Lampblack, R. M.	lb.	.15 @	.45
Mineral blacks	ton	35.00 @	45.00
Blues, Prussian	lb.	.70 @	.80
Soluble	lb.	.75 @	.85
Ultramarine	lb.	.12 @	.40
Browns, Umber, Turkey, burnt, powdered	lb.	.05 @	.06½
American, burnt	lb.	.02½ @	.04
Cadmium sulphide, yellow	lb.	2.00 @	2.25
Carbon, disulphide, bulk	lb.	.07 @	.07½
tetrachloride drums	lb.	.12 @	.14
Caustic Soda, 76@78%	cwt.	2.65 @	3.00
Chalk, precipitated, extra light	lb.	.05½ @	.06½
light	lb.	.05 @	.06
heavy	lb.	.05½ @	.06
China clay, domestic	ton	8.50 @	15.00
imported	ton	18.00 @	23.50
Fossil flour	lb.	.03¾ @	.05
Gilsonite	ton	47.50 @	60.00
Glue, extra white	lb.	.35 @	.40
medium	lb.	.30 @	.35
low grade		.20 @	.25
Glycerine, C. P. (drums)	lb.	.20 @	.21
cans		.22 @	.23
second hands		.20 @	—
Graphite, flake (bbl.)	lb.	.18 @	.20
powdered (bbl.)	lb.	.13 @	.15
Green, chrome, R. M.	lb.	.35 @	.40
Ground glass (fine)	lb.	.03½ @	.04
Hexamethylene	lb.	.90 @	1.00
Infusorial earth, powd'd.	lb.	.02 @	.035
bolted	lb.	.035 @	—
Iron oxide, red, reduced grades	lb.	.07 @	.08
red, pure, bright	lb.	.15 @	.20
Lead, red, dry (casks)	lb.	.10¼ @	.10½
sublimed	lb.	.09¼ @	.09¾
white, basic carb.	lb.	.09 @	.09½
white, basic sulp.	lb.	.08¼ @	.08½
Lime flour	lb.	.01¾ @	.02
Litharge (casks)	lb.	.09¾ @	.10½
English	lb.	*.12 @	.13
Lithopone, domestic, bbls.	lb.	.06½ @	—
in bags		.06⅝ @	—
Magnesia, carbonate	lb.	.12½ @	.13½
calcined, heavy	lb.	.12 @	.14
calcined light	lb.	.65 @	.75
Magnesite, calcined, pwd.	ton	65.00 @	—
Mica, powdered	lb.	.04¾ @	.05
Mineral rubber (asphaltum base)	ton	80.00 @	115.00
Naphtha, motor gasoline, (steel bbls.)	gal.	.23½ @	—
68 @ 70 degrees (steel bbls.)	gal.	.30½ @	—
70 @ 72 degrees (steel bbls.)	gal.	.31½ @	—
73 @ 76 degrees (steel bbls.)	gal.	.33½ @	—
machine (wood bbls.)	gal.	.36½ @	—
Oil corn, crude	lb.	.21 @	—
corn, refined	lb.	.25½ @	.27
linseed (bbls.) spot		1.98 @	—
linseed (bbls.) Aug.-Oct.		1.90 @	—
in carloads		1.95 @	—
tank cars		1.91 @	—
Oil palm, Lagos	lb.	.17 @	—
pine, yellow	gal.	.79 @	—
rapeseed, refined	gal.	1.50 @	1.55
rapeseed, blown	gal.	1.60 @	1.65
rosin, first rectified	gal.	.85 @	—
second run		.87 @	—
tar (commercial)	gal.	.45 @	—
Orange mineral, American	lb.	.13¼ @	.14¼
imported	lb.	.15 @	.20
Paraphenylenediamme	lb.	3.00 @	3.50
Petrolatum, bbls., amber	lb.	.07½ @	.08
pale yellow	lb.	.06 @	.07
Pine tar kiln	bbl.	12.00 @	12.50
Pitch	bbl.	8.25 @	—
Plaster of paris	bbl.	2.00 @	3.00
Red Tuscan	lb.	.22 @	.30
Indian (reduced)	lb.	.14 @	.16
Standard	lb.	.12 @	.16
Rosin (common to good)—280 lbs.	bbl.	16.00 @	—
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Shellac, fine orange	lb.	— @	—
T. N.	lb.	1.10 @	—
Bleached ordinary	lb.	1.10 @	—
Bleached bonedry	lb.	1.20 @	—
Silex (silica)	ton	22.00 @	40.00
Soapstone, powdered	ton	12.00 @	17.50
Starch, corn, powdered	lb.	5.77 @	5.99
pearl		5.62 @	5.84
Sulphur, crude	ton	*50.00 @	—
100 pounds		3.20 @	4.25
roll		2.70 @	3.15
commercial superfine		2.50 @	—
Talc, American	ton	20.00 @	40.00
French	ton	*30.00 @	35.00
Toluol, pure, in drums	gal.	.22 @	.27
Tripolite earth	ton	60.00 @	70.00
Turpentine, pure gum—spirits	gal.	1.00 @	1.03
wood	gal.	.97 @	—
Venice, artificial	gal.	.13 @	.13½
Vermilion, English	lb.	1.30 @	—
Wax, beeswax, crude yel.	lb.	.39 @	.41
ceresin, white	lb.	.18 @	.25
carnauba, No. 3	lb.	.45 @	.46
Montan, crude	lb.	.35 @	.36
ozokerite, black	lb.	*.60 @	.61
ozokerite, green	lb.	Nominal	
candelilla		.31 @	.33
Wax, Paraffin, refined, 118/120 M. P. (bbls.)	lb.	.08¼ @	.08½
Paraffin, 125/127 M. P.	lb.	.08½ @	.08¾
Wax, Paraffin, 128/130 M. P.	lb.	.09 @	.09¼
133/135 M.P.	lb.	.10¾ @	.11
Crude, 120/122 M.P.	lb.	.10¾ @	—
124/126 M.P.	lb.	.10½ @	.10¾
Whiting, commercial	cwt.	1.15 @	1.20
Alba	cwt.	1.25 @	—
Paris, white, American	cwt.	1.50 @	—
English cliffstone	cwt.	1.75 @	2.50
Yellow chrome	lb.	.24 @	.25
†Zinc oxide, States Brand		.10 @	—
horsehead brand	lb.	†.10 @	.10¼
selected	lb.	†.09½ @	—
"XX red"	lb.	†.09 @	—
French process, green seal	lb.	†.10½ @	—
red seal	lb.	†.09¼ @	—
white seal	lb.	†.11½ @	—
substitutes	ton	35.00 @	40.00
sulphate, pure	lb.	*.04 @	.04¼

* Nominal. † Contract prices.

Crude Rubber

NEW YORK, July 7, 1919.

Developments in the market for crude rubber have been generally lacking during the past fortnight, and prices continue without radical change. The market has apparently recovered from its slump of the past few months, and dealers are making a determined effort to maintain the market on its present basis. Arrivals from primary markets continue fairly large, and spot stocks are also ample. Heavy consignments are coming in from the Far East, but in many instances the goods are consigned direct to the manufacturer, many of the latter now filling their requirements by direct importation and only entering the domestic market to pick up small stocks to round out their holdings.

The trade is paying a good deal of attention to the export situation of the market, but it is generally believed that domestic receipts will not be heavily cut by any purchasing of the Central Powers in the primary markets. On the other hand, the call for manufactured rubber goods from European countries is expected to be heavy, and importers are counting upon this factor to improve demand for their holdings.

	Cents per pound.
Para—Up-river fine	55½ @ 56
Up-river medium	52 @ ....
Up-river coarse	33½ @ 34
Caucho ball	33½ @ 34
Islands fine	48 @ ....
Islands coarse	21½ @ ....
Cameta	22½ @ ....
Madeira fine	62 @ ....
Knapsack	73 @ ....
Ceylons—Smoked sheets, ribbed	40½ @ 41
Smoked sheets, plain	40 @ ....
First latex pale crepe	41½ @ 42
Amber crepe	Nominal.
Clean brown crepe	54 @ ....
Rio Nunez Stung	55 @ ....
Prime Lurinam sheets	1.07½ @ ....
Centrals—Corinto prime	34 @ ....
Esmeralda, prime	34 @ ....
Mexican scrap	25 @ ....
Balata sheets	57 @ ....
Guayule, wet	25 @ ....
Balata, block	57 @ ....

Scrap Rubber

NEW YORK, July 7, 1919.

Trade in reclaimed rubber is of diminished volume, the low price of crude being an adverse element in a highly competitive market. Reclaimers, confronted by the necessity of finding outlets for their product, are said to be considering the establishment of plants for the manufacture of goods in which great resiliency is not required. They also assert that prices for scrap are too high.

Scrap rubber is in light demand. Stocks are said to be heavy, and reclaimers are buying sparingly on the ground that prices are such as to permit of little profit after being converted into the reclaimed article. Possibilities of exportations to Europe, and the buying of the tire repairing trades are the chief encouraging aspects in an otherwise dull situation. To make matters worse considerable quantities of scrap have been offered by Chinese interests to American buyers who, it is reported, are not keen about taking the foreign material.

The following are averages of dealers' sales prices in New York:

Boots and shoes	7.00	@	7.25
Arctics, trimmed	5.00	@	5.50
Arctics, untrimmed	4.25	@	4.75
Tires—Automobile	3.25	@	4.00
Bicycles, pneumatic	2.25	@	2.50
Mixed hose	1.00	@	1.25
Air brake	3.75	@	4.00
Inner tubes, No. 1	17.00	@	18.00
Inner tubes, No. 2	9.00	@	9.50

Accelerators

THE use of organic accelerators is no longer a matter of guesswork. It is highly scientific.

As the largest American producers of Aniline Oil and Intermediates, we offer you full co-operation and service. Our laboratories stand ready to assist you in any chemical problem that may arise.

National Aniline & Chemical Company

INCORPORATED

New York: 21 Burling Slip

Akron, Ohio: People's Savings & Trust Building

F. R. Henderson & Co.

IMPORTERS

Crude Rubber

NEW YORK CITY AKRON, OHIO